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UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Northeastern Region
Plant Genetics and Germplasm Institute
Vegetable Laboratory
Beltsville, Maryland

THE POTATO-BREEDING PROGRAM, USDA, 1975

By
Raymon E. Webb, and Others
and
State Cooperators

(Forty-sixth Annual Report by Cooperators)
Agricultural Research Center
Beltsville, Maryland

May 1976

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PGGI-76-3

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TABLE OF CONTENTS

Page

UNITED STATES DEPARTMENT OF AGRICULTURE
Beltsville Agricultural Research Center, Beltsville, MD, and Chapman and Aroostook Farms, Presque Isle, ME 1
By Raymon E. Webb, USDA, Beltsville, MD; David Wilson, Presque Isle, ME; and James Frank, Orono, ME.
BARC, Distribution, Presque Isle, and Chapman Farm 1

DISEASE RESISTANCE EVALUATIONS 14
By James Frank, David Wilson and R. E. Webb
Resistance to Verticillium wilt 14
Resistance to late blight 15
Resistance to common scab 15

INTER-REGIONAL POTATO INTRODUCTION PROJECT (IR-1) 31
By R. W. Ross and R. E. Hanneman, Jr., Wisc. Agr. Exp. Sta., Madison, Wisconsin

NORTH CENTRAL REGIONAL TRIALS 33
By R. H. Johansen, N. D. Agr. Exp. St., Fargo, N. D., and Cooperators
Environmental conditions 33
Cultural Practices 33
Entries 34
Yield 34
Maturity 34
Total Solids 34
Scab Reactions 34
Internal and External Defects 34
Chip Quality 35
Overall Quality 35

WISCONSIN 44
By R. E. Hanneman, Jr., Cooperative ARS, USDA and Wisconsin Station

ALABAMA 45
By J. L. Turner, Harrison Bryce and Hubert Harris - Maine Station, J. E. Barrett, R. N. McDaniel, John T. Owen III and Frank E. Garrett - Gulf Coast Substation, Marlin H. Hollingsworth - North Alabama Horticulture Substation, John Eason and Frank Lowery - Sand Mountain Substation.

ALASKA 48
By Curtis H. Dearborn, Univ. of Alaska, Palmer, Alaska

CALIFORNIA 52
By R. E. Voss and D. E. Halseth, Univ. of Calif., Davis

Page

COLORADO 58
By J. A. Twomey and M. Workman, San Luis Valley Branch Station, Center, Colorado

FLORIDA 60
By J. R. Shumaker, D. P. Weingartner, James Watts, and Raymon E. Webb
Variety and Seedling Trials

PACIFIC NORTHWEST (IDAHO & OREGON) 68
By J. J. Pavek, D. R. Douglas, D. L. Corsini, R. E. Ohms, C. Stranger

LOUISIANA 76
By J. F. Fontenot, D. W. Newsom, R. J. Constantin, and H. M. Brewer

MAINE 84
By Robert V. Akeley, Alvin F. Reeves, and Robert B. Long

By Frederick R. Holbrook 93

By S. S. Leach, USDA, Orono: Raymon E. Webb and David Wilson 95

By H. J. Murphy and Michael J. Goven 101

MARYLAND 111
By R. W. Goth, USDA, Beltsville; and R. E. Webb

MINNESOTA 112
By E. B. Radcliffe

MISSISSIPPI 114
By C. P. Hegwood, Jr.
Irish Potato Variety Trials

NEW JERSEY 116
By C. E. Cunningham, R. L. Nickeson, F. L. Merwarth, and T. E. Snyder
Campbell Institute for Agricultural Research

By Melvin R. Henninger 126

NEW YORK 134
By R. C. Cetas (Long Island)

By R. L. Plaisted and H. D. Thurston 137

By Joseph B. Sieczka (Upstate New York) 143

By Leon E. Weber (New York State) 150

NORTH CAROLINA 153
By F. L. Haynes

NORTH DAKOTA 159
By R. H. Johansen, J. E. Huguelet, B. Farnsworth and R. T. Zink

Page

OHIO 174
By Floyd Lower, A. R. Mosely, E. C. Wittmeyer, Randall Rowe and David Kelly

PENNSYLVANIA 180
By J. D. Harrington and D. R. MacKenzie

SOUTH CAROLINA 189
By W. R. Sitterly, Clemson University Truck Experiment Station, Charleston

TEXAS 191
By J. Creighton Miller, Jr. and Douglas G. Smallwood

VERMONT 201
By S. C. Wiggans, W. R. Kelly, R. N. Jensen, and H. J. Murphy

VIRGINIA 206
By Boyett Graves and R. N. Hofmaster, Virginia Truck and Ornamentals Research Station

WASHINGTON 213
By N. Holstad, R. Kunkel, R. Holland and M. Martin

By Mark W. Martin 225

WEST VIRGINIA 232
By R. J. Young, R. L. Williams, and Freddie J. Alt

WYOMING 238
By K. E. Bohnenblust

BELTSVILLE AGRICULTURAL RESEARCH CENTER (BARC) BELTSVILLE, MARYLAND AND CHAPMAN AND AROOSTOOK FARMS, PRESQUE ISLE, MAINE

Raymon E. Webb (BARC), David R. Wilson (Presque Isle, Maine)
and James A. Frank (Orono, Maine)

BARC

Breeding and Evaluation: One-hundred-four parental clones and varieties possessing improved quality, pest resistance and adaptability attributes were included in the breeding blocks. Eight-hundred-twenty seed lines from selective matings were obtained. Two-hundred-twenty-two seed lines were selected for seedling tuber production in the greenhouse. Approximately 83,000 seedling tubers were produced for distribution to cooperators. Approximately 250 clones were evaluated for resistance to viruses A, X and Y.

Distribution of Materials: Distribution of true seed, seedling tubers, advanced selections and varieties continued in 1975. A summary of shipments are given in Tables 1, 2 and 3.

PRESQUE ISLE

Planting began May 15 and because of frequent early season heavy rainfall continued intermittently through June 14. Following a wet planting season, dry weather set in and continued throughout the growing season (Table 4). Rainfall was about five inches below season's normal. Excessively high temperatures occurred during July and August, further stressing the drought impact on plantings. Harvest season temperature and moisture were excellent. Yields were slightly above those of 1973, but considerably below those of 1974.

CHAPMAN FARM

Approximately 40,000 seedling tubers representing 143 parental combinations from BARC were planted on Chapman Farm. Drought was more severe on Chapman than on Aroostook. Yields of seedlings and clonal increases were about 40 percent of normal. One-thousand-eight-hundred-sixty-seven single-hill selections were made for observation in 1976. Fifteen-hundred-forty-three selections were grown in 12-hill lots during 1975 for horticultural observations and quality and pest resistance evaluations. Three-hundred-forty-seven selections were grown from the 1974 12-hill lots for distribution to cooperators, yield trials, and quality and pest resistance evaluations. A number of horticulturally promising clones were increased for larger plantings with cooperators.

AROOSTOOK FARM

Experimental design for all yield tests was a randomized block with four replications. All plots received 800 pounds of 15-15-15 fertilizer banded in 36-inch rows by a two-row planter. Clones to be tested were hand planted in 25-hill rows with 9-inch spacing. A 14-inch seed spacing was used in the russet yield trial. Cultural methods and materisls for weed, insect, and disease control were according to local recommendations. Rainfall and temperature during the season are given in Table 4. At harvest, all entries

were graded and samples hand selected for specific gravity and quality evaluations. Specific gravity was determined by the air and water method. After specific gravities were determined, the samples were divided and placed in 50°F and 40°F storage at 90 percent relative humidity.

Samples were fried after four months of storage. One set of samples from the yield trials were chipped directly from 50°F. Those stored at 40°F were reconditioned for two weeks prior to frying. Potato chips were made from each sample by cutting the tubers in half and taking a 1/16-inch thick slice from each tuber with a rotary food slicer. Slices were rinsed in water and placed on paper towels to remove excess water. Chips were then fried at 340°F in Primex vegetable shortening until bubbling ceased.

A french fry plug 3/8-inch in diameter was cut from each half of the tubers in the sample. After plugs were trimmed, rinsed, and excess water removed, they were fried at 365°F in Primex shortening for 5 minues.

Each potato chip and french fry was classified after frying into color classes. Chip classes ranged from 1 = very light to 10 = very dark. French fry classes ranged from 1 = very light to 5 = very dark. Weighted averaged were calculated by multiplying the number of chips or fries in each color class by the color class, totaled, and divided by the number of chips or french fries in each sample. Color ratings were made using the PCII reference color chart 1206-U.

After color classification, each french fry plug was broken open and internal texture classified as 1 = mealy, 2 = intermediate, or 3 = soggy and a weighted texture index calculated.

SUMMARY

B6987-56 continued to perform highly satisfactorily at all test locations except for the presence of some tuber necrosis in the sandy soils of Virginia, New Jersey, and Long Island where the summer temperatures of 1975 were excessively high. Although other clones and varieties were affected similarly in these test plots, B6987-56 (release as the variety Atlantic pending) should be grown with caution in those light sandy soil areas where excessively high summer temperatures are likely to occur.

B6987-29 (widely adapted, round white), B7147-8 (oblong russet adapted to the Northeast and Midwest) and B7583-6 (variable shaped russet similarly adapted as B7147-8) are currently under grower trials as potential varietal releases.

Table 1. Distribution of first year seedling tubers and true seed of selected parental combinations from BARC, Beltsville, MD.

Location	Cooperator	Number		
		Progeny	Seedling	True Seed
Domestic				
Colorado	James Twomey	67	14,293	
Kansas	Thomas Wagner	12	1,622	
Maine	David Wilson		37,500	
Minnesota	Florin Lauer	5		2,300
North Carolina	Frank Haynes	50	10,412	
" "	" "	32		15,400
Foreign				
Brazil	C. A. Drummond	1		100,000
Pakistan	Altaf Hussain	45	5,030	
	S. Kamal Khan	44	4,849	
	TOTAL	256	72,706	115,700

Table 2. Distribution of Varieties and Advanced Selections sent to Cooperating States.

State	Cooperator	Number	
		Varieties	Clones
Alaska	Curtis Dearborn		1
Alabama	J. L. Turner	1	15
California	Ronald Vose		3
Delaware	Michael Orzalek	4	3
Florida	James Schumaker	11	187
Hawaii	J. Henri Boz	11	
Idaho	Dexter Douglas	4	44
Kansas	Thomas Wagner		6
Maine	Fred Holbrook	8	17
	Simeon Leach	11	91
	James Frank	3	7
	Sangerville		16
	Robert Akeley		15
Maryland	Robert Goth	10	2
	Stephen Sinden	26	118
	Lind Sanford		18
	Howard Heggestead	4	
	Raymon Rebois	3	13
Minnesota	Neil Anderson	1	
Mississippi	C. P. Hegwood		9
New Jersey	Melvin Henninger	5	149
	Richard Nickeson		4
New York	Joseph Sieczka	6	5
	Robert Cetas		19
	Leon Weber	2	9
North Dakota	Robert Johanson		1
Pennsylvania	David McKenzie	1	46
Ohio	Floyd Lower		1
	J. P. Sleesman		
	Lind Sanford		77
South Carolina	Wayne Sitterely	3	8
Texas	Creighton Miller		4
Virginia	Boyette Graves	12	144
	L. I. Miller	1	1
Washington	Mark Martin		10
	Peter Thomas		1
	Robert Kunkel		9
Wisconsin	Robert Hanneman		4
West Virginia	Robert Young		5
	TOTALS	127	1,062

Table 3. Varieties and Clones sent to foreign countries.

Country	Cooperator	Varieties	Clones
C. African Repbl.	E. Lefort	7	
Israel	Chen Shifriss		14
Korea	In Whan Kim	9	
Lebanon	Primo Accatino	2	
Pakistan	Altaf Hussain	25	31
	Said Kamal Khan	24	31
Peru	Parviz Jatala		4
Poland	Jerzy Rasinski	7	
Nepal	Howard Hyland	1	1
New Zealand	R. G. Robinson		1
Rhodesia	M. J. Joyce	10	
Russia	Howard Hyland	6	2
	TOTALS	89	84

Table 4. Weather data, Aroostook Farm, Presque Isle, Maine; May-October, 1976.

Date	Temperature 7-day Average F		Precipitation 7-day total
	Maximum	Minimum	inches
5/5 - 5/11	63.0	33.0	.00
5/12- 5/18	72.7	43.7	.19
5/19- 5/25	71.6	46.0	1.38
5/26- 6/1	65.3	47.9	.89
6/2 - 6/8	63.9	45.3	1.71
6/9 - 6/15	69.3	48.0	.95
6/16- 6/22	78.3	55.1	.11
6/23- 6/29	88.1	59.1	.00
6/30- 7/6	82.0	52.6	.71
7/7 - 7/13	77.0	62.1	.08
7/14- 7/20	86.0	65.3	.62
7/21- 7/27	79.7	55.4	1.46
7/28- 8/3	85.6	58.1	.06
8/4 - 8/10	79.0	56.0	.36
8/11- 8/17	81.9	53.9	1.01
8/18- 8/24	71.1	47.0	.38
8/25- 8/31	67.6	47.4	.38
9/1 - 9/7	66.6	46.2	.74
9/8 - 9/14	66.7	43.4	1.44
9/15- 9/21	65.0	45.0	.14
9/22- 9/28	61.7	45.0	.97
9/29-10/5	65.0	42.4	.10
10/6 -10/12	56.0	31.3	.42
		TOTAL	14.10

Table 5. Yields, tuber size distribution and quality characteristics of clones harvested 100 days after planting on Aroostook Farm.

Pedigree	MKT. CWT	% MKT.	Culls	% of Marketable 1-7/8-2-1/4"	2-1/4-3-1/4"	3-1/4-4"	>4"	Tuber[1] Rating	SP.[2] GRAV	50°F[3] Color Chip	Color FF	FF TEX	40-70°F Color Chip	Color FF	FF TEX
B6987-2	262.7	94	5	29	56	10	1	1	82	6.4	2.3	2.0	6.5	2.4	2.0
B6987-43	271.6	93	3	10	54	29	5	0	87	4.9	1.7	1.6	6.2	1.3	1.8
B7620-4	249.6	94	6	29	63	3	-	2	85	7.4	3.1	2.0	7.5	3.7	2.0
B7621-2	303.6	94	4	14	71	10	-	1	80	6.5	2.0	1.7	6.5	2.4	1.9
B7664-2	216.3	90	10	38	49	3	-	1	84	5.9	2.3	1.8	6.3	1.9	1.7
B7805-1	239.7	93	4	18	65	11	2	3	80	7.4	3.5	2.0	7.8	3.5	2.2
B7839-7	283.0	92	8	30	54	8	-	2	78	7.9	3.0	2.1	9.2	3.9	2.6
B7840-2	259.0	89	7	23	51	16	5	0	71	7.8	3.3	2.0	9.4	4.5	2.1
B7871-5	345.4	95	2	9	64	21	4	1	77	8.2	3.4	2.2	8.7	3.4	2.3
B7888-8	251.3	91	8	39	44	9	1	1	82	6.2	2.0	2.0	7.8	2.7	1.9
B7918-3	279.9	94	6	21	61	12	-	1	79	8.1	3.4	2.0	8.7	3.5	2.0
B7939-4	221.5	87	13	31	46	10	-	0	76	6.0	2.0	2.0	7.3	2.3	1.9
B8123-3	251.3	90	9	34	52	4	1	2	86	7.2	2.8	1.8	7.3	3.2	1.9
B8123-12	274.9	90	4	14	54	22	6	2	82	6.3	1.8	1.9	6.3	1.9	2.0
B8140-1	265.8	92	8	31	52	9	-	0	75	6.9	2.6	2.0	6.6	2.5	2.1
B8148-4	236.4	85	15	39	43	3	-	1	82	6.9	2.7	2.0	8.0	3.4	2.1
Cobbler	228.1	89	9	22	56	12	2	1	78	7.8	2.8	1.9	7.6	3.1	2.0
Monona	253.4	94	5	19	53	22	1	1	73	4.0	1.6	2.1	5.8	1.3	2.0
Superior	282.7	94	3	14	65	16	2	2	83	6.7	2.4	2.0	7.0	2.1	2.0
LSD .05	32								3.5	.8	.6	.2			

1/ 0 = Very poor to 5 = Outstanding

2/ 1.0 omitted

3/ Chips, 1-7 satisfactory; FF 1-3 satisfactory; Tex., 1-2 satisfactory

Table 6. Yields, tuber size distribution and quality characteristics of clones harvested 110 days (Trial #1) after planting on Aroostook Farm.

Pedigree	MKT CWT	% MKT	Culls	Marketable 1-7/8-2-1/4"	Marketable 2-1/4-3-1/4"	Marketable 3-1/4-4"	Marketable >4"	Tuber[1/] Rating	SP.[2/] GRAV.	50°F[3/] Color Chip	50°F[3/] Color FF	50°F FF TEX	40°F-70°F Color Chip	40°F-70°F Color FF	40°F-70°F FF TEX
B7167-2	256.9	92	8	39	50	3	-	2	88	5.7	2.2	1.9	6.3	1.8	2.0
B7573-3	287.1	92	8	24	58	10	-	1	79	6.0	2.5	2.0	7.3	2.8	1.9
B7592-1	277.6	93	5	19	60	14	3	2	82	6.8	2.5	2.0	7.0	2.5	1.9
B7631-8	310.3	94	6	25	57	12	-	2	82	8.1	3.4	2.0	8.8	4.1	2.0
B7650-9	258.6	85	15	39	45	2	-	2	78	6.5	2.6	1.8	6.8	2.1	2.0
B7680-3	300.7	93	5	22	50	21	2	0	80	6.3	2.3	2.0	7.7	2.7	2.2
B7768-4	315.8	96	3	16	58	21	2	0	81	6.7	2.7	1.9	7.3	2.8	1.9
B7802-2	354.1	97	3	18	63	16	-	3	79	5.8	1.6	1.9	6.0	2.4	1.9
B7825-5	278.4	82	18	38	41	4	-	2	82	6.3	2.3	1.9	8.0	3.4	2.0
B7828-9	291.8	84	16	41	43	1	-	1	81	6.9	2.9	2.0	8.2	3.4	2.0
B7830-4	284.4	89	10	34	46	8	1	1	71	6.6	2.1	2.0	7.6	3.4	2.1
B7832-2	284.2	97	13	36	49	2	-	2	74	6.9	2.9	2.2	7.2	2.9	2.0
B7838-2	302.4	86	14	39	45	2	-	9	80	6.4	2.9	2.0	7.2	2.6	1.9
B7845-10	294.1	87	12	28	48	11	1	2	82	7.3	3.2	2.0	7.5	3.0	2.1
B7845-17	263.5	80	19	42	34	5	1	0	78	8.3	4.0	2.2	8.9	3.8	2.1
Cobbler	247.4	89	7	17	55	17	5	0	79	7.0	2.4	1.8	7.0	3.0	1.9
Monona	249.0	93	5	18	58	18	1	1	73	5.0	1.4	2.0	5.7	1.3	1.7
Superior	291.2	96	4	21	58	18	-	2	84	6.1	2.0	1.9	6.3	1.4	2.2
LSD 5%	36								3.9	.8	.6	.3			

1/ 0 = very poor to 5 = outstanding

2/ 1.0 omitted

3/ Chips, 1-7 satisfactory; FF, 1-3 satisfactory; Tex. 1-2 satisfactory

Table 7. Yields, tuber size distribution and quality characteristics of clones harvested 110 days (Trial #2) after planting on Aroostook Farm.

Pedigree	MKT CWT	% MKT	Culls	Marketable 1-7/8-2-1/4"	2-1/4-3-1/4"	3-1/4-4"	>4"	Tuber[1/] Rating	SP[2/] GRAV	50°F[3/] Color Chip	FF	FF TEX	40°F-70°F Color Chip	FF	FF TEX
B7858-5	271.8	88	9	26	58	16	3	1	81	6.6	2.3	1.7	8.0	2.2	2.0
B7863-6	277.1	93	3	16	65	19	4	1	83	5.9	1.6	1.9	6.5	2.2	2.0
B7866-3	241.5	85	5	13	57	30	10	1	71	7.2	1.7	1.8	7.6	2.3	2.2
B7914-2	274.0	91	5	21	60	19	4	0	84	6.4	2.1	2.0	7.8	2.7	2.0
B7927-1	261.6	93	5	21	67	12	2	2	83	6.7	2.5	1.8	7.4	2.7	2.0
B7929-3	246.9	88	12	47	50	2	-	2	88	5.6	2.4	1.9	6.3	2.1	2.0
B8019-4	280.2	97	3	17	67	17	-	2	80	8.3	3.0	2.0	9.6	4.4	2.0
B8024-1	260.8	91	9	42	56	2	-	3	82	6.9	3.6	2.0	7.5	2.8	2.1
B8036-1	253.1	91	5	23	57	20	3	2	76	7.7	3.1	2.3	8.8	3.7	2.2
B8073-3	267.8	87	7	20	59	21	6	1	79	7.2	2.9	2.1	8.7	3.5	2.0
B8101-3	280.2	92	8	39	55	6	-	2	83	6.3	2.0	1.9	6.7	2.2	2.0
BA68504-1	267.0	95	5	24	55	21	-	0	85	7.1	2.7	1.8	7.2	2.7	2.0
Cobbler	245.4	87	10	23	57	19	3	0	82	7.2	2.8	2.0	6.8	2.6	2.0
Monona	277.9	93	6	20	58	23	1	2	77	5.6	1.3	2.0	5.9	1.6	2.0
Superior	236.1	93	4	14	54	32	3	2	82	6.5	2.5	1.9	6.6	2.2	1.9
LSD 5%	34								3.3	.8	.5	.3			

[1/] 0 = very poor to 5 = outstanding

[2/] 1.0 omitted

[3/] Chips, 1-7 satisfactory; FF, 1-3 satisfactory; Tex, 1-2 satisfactory.

Table 8. Yields, tuber size distribution and quality characteristics of clones harvested 120 days (Trial #1) after planting on Aroostook Farm.

Pedigree	MKT CWT	% MKT	Culls	Marketable 1-7/8-2-1/4"	2-1/4-3-1/4"	3-1/4-4"	>4"	Tuber[1] Rating	SP[2] GRAV	50°F[3] Color Chip	Color FF	FF TEX	40°F-70°F Color Chip	Color FF	FF TEX
B6955-14	280.2	91	5	21	59	20	4	2	91	6.5	1.7	1.8	6.9	2.0	2.0
B6987-56	284.1	91	4	15	59	26	5	3	86	6.5	1.4	1.9	6.2	1.4	1.7
B7139-4	244.6	81	2	10	51	39	17	1	83	5.6	1.3	1.9	7.4	1.9	1.7
B7151-4	267.0	89	5	21	50	29	6	1	85	6.0	1.3	1.9	6.2	1.5	1.8
B7155-3	236.8	82	9	25	51	23	9	0	79	6.5	2.2	1.9	8.2	3.2	2.0
B7165-8	326.6	91	7	22	57	21	2	2	86	5.7	1.7	2.0	6.2	1.7	1.8
B7200-26	279.4	91	8	15	59	26	1	3	79	4.9	1.0	2.2	6.4	1.7	2.2
B7618-6	279.4	93	4	26	58	16	4	3	78	6.5	1.1	1.6	6.7	2.3	2.0
B7620-7	349.1	90	5	28	57	15	3	3	84	6.4	1.4	2.0	6.7	1.8	1.9
B7763-3	307.3	88	11	40	45	15	1	2	81	9.0	3.8	2.0	9.6	4.3	2.0
B7845-4	318.9	85	12	41	51	8	3	3	82	8.8	3.7	2.4	9.5	4.5	2.3
B7845-6	236.1	92	8	18	58	24	-	2	83	8.3	3.6	2.2	8.9	4.1	2.4
Abnaki	322.8	88	4	16	51	33	5	3	80	7.6	2.8	2.1	8.4	3.6	2.0
Katahdin	275.5	85	2	11	54	36	13	3	76	7.8	2.9	2.0	8.2	3.6	2.1
Kennebec	287.2	85	3	17	51	31	11	3	79	6.8	1.8	2.0	6.8	1.9	2.0
Hudson	307.2	88	7	33	60	6	8	1	71	8.8	4.0	2.0	9.8	4.9	2.0
Norchip	257.0	91	7	29	65	7	2	0	85	6.0	1.0	1.7	6.4	1.6	1.8
B5141-6	253.1		8				1	2	98	6.0	1.4	1.7	6.7	1.8	1.7
LSD 5%	36								5.0	1.5	.6	.3			

1/ 0 = very poor to 5 = outstanding

2/ 1.0 omitted

3/ chips, 1-7 satisfactory; FF, 1-3, satisfactory; Tex. 1-2, satisfactory

Table 9. Yields, tuber size distribution and quality characteristics of clones harvested 120 days (Trial #2) after planting on Aroostook Farm.

Pedigree	MKT CWT	% MKT	Culls	Marketable 1-7/8-2-1/4"	Marketable 2-1/4-3-1/4"	Marketable 3-1/4-4"	Marketable >4"	Tuber Rating	SP GRAV	50°F Color Chip	50°F Color FF	FF TEX	40°F-70°F Color Chip	40°F-70°F Color FF	FF TEX
B7859-2	260.1	86	12	40	50	10	2	2	88	5.7	1.4	1.5	6.4	1.8	1.7
B7863-2	314.0	94	6	27	61	12	1	2	81	7.7	2.7	2.1	7.6	2.7	2.1
B7897-1	243.8	88	11	35	56	9	1	1	78	6.0	1.7	1.6	6.3	1.8	2.0
B7910A-6	297.2	87	5	17	65	18	8	3	72	6.2	2.4	2.0	8.0	3.1	2.1
B7929-5	213.6	81	19	51	45	4	-	1	85	6.4	1.9	2.0	6.3	2.2	2.0
B7929-11	243.0	88	11	32	52	16	1	1	85	6.6	2.1	2.0	6.4	2.5	2.1
B7930-2	263.9	85	14	33	54	13	1	1	80	7.7	3.4	2.2	8.0	3.1	2.1
B7978-1	294.9	90	9	25	63	12	1	2	77	6.8	2.2	2.0	7.0	2.0	2.0
B8086-3	285.6	84	12	29	53	18	4	2	81	7.9	3.0	1.8	7.9	2.8	2.0
B8091-8	322.8	90	10	29	53	18	-	2	85	7.6	3.2	1.8	7.7	2.5	1.6
B8125-5	205.1	73	21	46	49	6	6	2	81	6.7	2.7	2.0	7.1	2.4	2.0
BA6893-3	278.6	83	17	43	50	7	-	3	76	9.0	3.9	2.2	8.9	4.0	2.1
Abnaki	319.7	92	5	15	61	24	4	3	76	8.0	3.1	2.1	7.6	2.8	2.3
Katahdin	290.3	91	5	19	69	26	4	3	76	7.2	3.1	2.0	8.2	3.0	2.1
Kennebec	303.4	88	4	12	52	42	9	3	79	6.3	1.8	1.8	6.9	1.7	2.0
Hudson	296.4	80	6	18	51	31	14	3	70	9.5	4.5	2.0	9.3	3.7	2.0
Norchip	251.6	84	16	39	54	7	1	0	83	5.8	1.3	1.7	5.7	2.1	2.1
B5141-6	250.8	89	10	29	60	10	1	3	94	5.6	1.4	1.4	6.4	1.8	1.7
LSD 5%	45								4.0	.9	.6	.3			

1/ 1 = very poor to 5 = outstanding

2/ 1.0 omitted

3/ Chips, 1-7 satisfactory; FF, 1-3 satisfactory; Tex, 1-2 satisfactory

Table 10. Yields, tuber size distribution and quality characteristics of Russet clones (Trial #1) harvested 120 days after planting on Aroostook Farm.

Pedigree	MKT CWT	% MKT	Culls	Marketable 1-7/8-2-1/4"	Marketable 2-1/4-3-1/4"	Marketable 3-1/4-4"	>4"	Tuber Rating	SP GRAV	50°F Color Chip	50°F Color FF	FF TEX	40°F-70°F Color Chip	40°F-70°F Color FF	FF TEX
B7188-56	217.1	87	13	43	45	12	-	2	85	6.9	1.8	2.1	6.3	2.3	2.3
B7583-6	266.9	94	4	24	58	19	1	1	85	8.5	3.1	1.9	8.3	2.8	1.8
B7610-1	256.5	87	4	13	52	34	8	2	79	7.1	1.2	1.9	6.2	1.8	1.7
B7629-1	257.0	72	2	9	40	50	26	1	69	9.2	3.9	2.0	8.7	3.4	2.0
B7637-9	247.5	89	2	18	51	34	6	3	79	8.7	3.8	2.1	7.3	2.5	2.0
B7678-17	276.4	91	4	12	57	32	5	1	78	7.3	2.0	2.5	6.6	2.2	2.6
B7679-9	259.0	77	4	13	51	36	20	0	73	10.0	4.6	2.3	9.8	4.6	2.0
B7680-6	217.6	90	7	32	54	14	2	0	76	8.5	3.1	2.0	8.0	2.6	1.9
B7680-10	245.0	98	2	31	57	13	-	0	85	7.4	2.0	2.0	6.9	2.1	1.9
B7684-3	246.0	95	4	20	59	22	3	0	82	8.2	3.0	2.1	7.4	2.7	2.0
B7684-7	188.7	88	5	18	61	22	8	1	91	7.9	2.8	1.9	7.3	2.1	2.0
B7685-8	208.2	88	12	43	56	2	-	2	79	7.7	2.0	2.1	7.1	2.2	2.0
B7711-2	217.6	92	6	26	58	16	2	2	78	8.5	3.1	2.1	8.0	2.5	2.0
B7711-11	261.5	85	9	11	60	29	13	2	75	8.3	3.0	2.1	7.5	2.8	2.0
Nor.Rus.	282.9	92	6	23	59	16	3	3	77	8.4	3.6	2.1	8.3	3.4	2.0
Rus.Bur.	274.4	87	13	30	55	16	-	0	78	8.1	3.6	2.2	7.8	3.0	1.8
LSD 5%	71								4.0	.6	.7	.2			

1/ 1 = very poor to 5 = outstanding

2/ 1.0 omitted

3/ Chips, 1-7 satisfactory; FF, 1-3 satisfactory; Tex, 1-2 satisfactory

Table 11. Yields, tuber size distribution and quality characteristics of Russet clones (Trial #2) harvested 120 days after planting on Aroostook Farm.

Pedigree	MKT CWT	% MKT	Culls	Marketable 1-7/8-2-1/4"	Marketable 2-1/4-3-1/4"	Marketable 3-1/4-4"	>4"	Tuber Rating	SP GRAV	50°F Color Chip	50°F Color FF	FF TEX	40°F-70°F Color Chip	40°F-70°F Color FF	FF TEX
B7715-11	229.1	81	6	14	60	26	13	2	76	7.6	2.4	2.0	8.2	3.1	2.0
B7783-6	287.3	86	4	20	53	28	10	2	82	8.5	3.6	1.8	8.4	3.5	2.0
B7813-5	214.6	83	5	23	55	22	12	2	82	8.2	2.7	2.1	7.3	3.3	2.0
B7607-3	161.9	86	10	32	60	15	4	2	86	5.7	1.4	2.0	6.9	2.1	2.0
B7637-7	221.6	90	7	25	57	18	3	3	79	8.4	3.3	1.9	9.1	4.4	2.0
B7644-1	223.1	88	10	33	52	16	3	3	80	6.3	2.0	2.1	6.5	2.1	2.0
B7645-5	198.2	88	7	25	53	22	5	3	71	8.9	3.6	2.3	8.9	3.6	2.0
B7645-12	155.9	85	11	43	47	10	4	2	80	8.3	2.7	2.0	8.3	2.8	2.0
B7732-2	287.3	88	3	12	58	30	9	3	82	8.2	3.1	2.0	7.6	2.3	2.0
B7845-29	258.9	82	8	30	51	18	11	1	78	7.8	2.9	2.1	8.0	2.7	2.0
B7848-19	241.0	83	4	16	54	31	13	3	86	7.0	2.4	1.9	7.7	2.3	2.1
B7848-23	212.1	95	5	28	60	12	--	2	85	8.4	2.7	2.0	7.8	3.5	2.0
B7861-2	198.2	88	6	34	47	19	6	1	78	7.8	2.6	2.0	7.3	2.5	2.0
Nor.Rus.	279.9	86	6	23	59	18	8	2	75	8.9	3.7	2.1	8.3	3.3	2.0
Rus.Bur.	246.0	85	14	43	46	12	2	0	76	8.1	3.4	2.0	8.4	3.6	2.0
LSD 5%	61								3.6	.8	.9	.3			

1/ 0 = very poor to 5 = outstanding

2/ 1.0 omitted

3/ Chips, 1-7 satisfactory; FF, 1-3 satisfactory; Tex., 1-2 satisfactory

USDA, Presque Isle, Maine

James Frank, David Wilson, and R.E. Webb

Disease Resistance Evaluations

Disease resistance testing is carried out on Aroostook Farm at Presque Isle, Maine. Each test is located in its own isolated plot to prevent interference from other disease tests. The general procedures for each test are presented along with the disease reactions obtained in 1975 for all cultivars tested. All tests are replicated and the data presented is the summary of the replications.

The growing season of 1975 provided the first disaster encountered by the evaluation program since I entered the service in 1970. After a wet planting period, delaying our planting until the second week in June, a dry period of twelve days occurred along with temperatures averaging 87 degrees. These conditions were sufficient to dry up the majority of the Verticillium inoculum which had been added to the soil on the seed piece. The seed are dipped into spore suspensions of 80,000 spores per milliliter, and the soil populations from this inoculation generally reach 80-120 thousand propagules per gram of soil by mid-July. The population levels this year were only 3-5 thousand indicating a large mortality rate. Cool, wet conditions at and following planting permit optimal growth conditions for the fungus. Due to the severe conditions, the wilt symptoms never developed in the test plot and the clones involved will be retested in 1976.

The weather conditions through the remainder of the growing season were poor for optimum disease development in the late and early blight plots. Several inoculations of the blight pathogens were made and the disease was anchored in the plots, only to dry up in a few days. The July rainfall totalled 2.8 inches compared to 4.7 in 1974, and August rainfall totalled 2.1 compared to 4.0. The July and August maximum temperatures averaged 80.7 and 83.0, respectively, compared to 75.0 and 76.5 in 1974. August provided much of Maine with several record high temperatures, even going above 100 degrees in some locations. With several repeated inoculation attempts and utilizing a sprayer to add moisture to the vines, the blight plots finally provided lesions suitable for disease evaluation. Conditions were never adequate for a disease epidemic, however.

Resistance to Late Blight (Phytophthora infestans). Test clones were planted along with the variety Green Mountain, which served as a susceptible spreader. The Green Mountains were planted as guard rows and every third row in the plot. The plot consisted of two replications of a two-hill plot. The plot was inoculated with a zoospore suspension, field isolation (unknown race) in the second week of July and twice a week thereafter until the Green Mountains showed a heavy infection. Readings were taken once a week until plants were ready for harvest. Readings were made on a 0-9 scale with zero indicating no disease and nine signifying complete susceptibility.

Resistance to Early Blight (Alternaria solani). This field test consisted of two-hill plots, replicated twice with the guard rows, and every third row throughout the plot planted with a susceptible spreader (B5281-1). The plot was not inoculated because a heavy natural infection spread over the plot in the second week of July. Readings were taken once a week until plants were ready to harvest. Readings were made on a 0-9 scale with zero indicating no disease and nine signifying susceptibility.

Resistance to Common Scab (Streptomyces scabies). Tubers of the test clones were planted in the same field used in previous years for this test. The test consisted of two replications of a two-hill plot with susceptible Green Mountain planted as guard rows and every third row in the plot. The tubers were dug after Labor Day, and each tuber was rated and placed into a class. The two figures in the tables represent the number of tubers observed and the disease rating. The figure for disease rate is surface area affected/lesion type. For area: 0 = none; 1 = 1-19%; 2 = 20-39%; 3 = 40-59%; 4 = 60-79%; and 5 = 80-100%. For type: 0 = none; 1 - small, superficial lesions; 2 = medium-large, but superficial; 3 = large, slightly raised, or sunken; 4 = large and rough; 5 = coalesced and pitted.

Presque Isle Table I. Pedigrees tested in disease trials. 1975.

Pedigree	Scab	Early Blight	Late Blight
B6930-6		3.0	
B6951-1	3/2		0.0
B6955-35			3.0
B6969-2			3.5
B6986-2			0.0
B6987-29			0.0
B6987-43			1.5
B6987-56			0.0
B6987-86	0/0		0.0
B6987-131	1/3		0.0
B6987-136	T/3		0.0
B6987-145	1/3		0.0
B6987-148	T/3		0.0
B6987-162	T/2		0.0
B6987-184	T/3		0.0
B6987-224	1/2		0.0
B7009-4			3.5
BR7051-3		5.0	2.5
B7147-8	T/1		
B7148-4		5.0	
B7151-4			0.0
B7153-29		4.0	
B7160-4		4.0	
B7164-25			3.5
B7165-6		4.0	
B7165-8		4.0	
B7186-4			0.0
B7186-8			2.5
B7186-10			2.5
B7186-11			0.0
B7186-13			0.0
B7186-14			0.0
B7186-16			0.0
B7186-19			2.5
B7186-20			2.5
B7186-21			2.5
B7186-23			0.0
B7186-25			3.0
B7186-26			2.5
B7186-31			0.0
B7186-33			2.5
B7186-38			0.0
B7186-39			0.0

Presque Isle Table 1. Pedigrees tested in disease trials. 1975. contd.

Pedigree	Scab	Early Blight	Late Blight
B7186-41			4.5
B7186-42			0.0
B7252-3		5.0	
B7516-1	2/2		
B7516-2	1/1		
B7516-3	T/2		
B7516-6	T/1		
B7516-7	T/2		
B7516-9	T/3		
B7516-10	T/2		
B7529-5	2/2	4.0	
B7529-9	1/1		
B7552-3	2/1	4.0	
B7583-23	2/2		
B7584-12	1/1		
B7603-8	0/0		
B7603-9	T/1		
B7608-2			0.0
B7610-1			3.0
B7633-3	T/1		
B7633-6	T/2		
B7633-12	T/2		
B7636-15	0/0		
B7636-19	T/1		
B7636-22	1/2		
B7669-2	T/1		
B7678-18	T/2		
B7679-11	0/0		
B7680-11	1/2		
B7680-12	1/1		
B7698-1		3.0	
B7744-4	T/2		0.0
B7744-5	T/1		
B7744-6	T/1		
B7763-3		5.0	
B7767-2		4.0	
B7780-2	1/1		
B7783-8	T/1		
B7802-2		4.0	0.0
B7809-5		5.0	
B7813-5		5.0	
B7828-3	1/2		
B7828-8	2/2		

Presque Isle Table I. Pedigrees tested in disease trials. 1975. contd.

Pedigree	Scab	Early Blight	Late Blight
B7828-10	T/3		
B7828-13	T/4		
B7828-18	T/3		
B7828-19	T/2		
B7838-1	T/2		
B7838-5	1/3		
B7838-9	T/1		
B7845-4		4.0	
B7845-6		6.0	
B7845-10		6.0	
B7845-14		6.0	
B7845-17		7.0	
B7845-19		6.0	
B7845-21		6.0	
B7845-23		6.0	4.0
B7845-26		5.0	
B7858-6		5.0	
B7862-4	T/2		
B7865-12		5.0	
B7881-3		5.0	
B7888-7		5.0	
B7888-8		6.0	
B7888-9		5.0	
B7897-1		7.0	
B7897-3		6.0	
B7902-2	T/2	6.0	
B7902-4	1/1		
B7902-7	1/1		
B7902-8	1/1	4.0	
B7902-9	1/1	6.0	
B7902-11	T/3		
B7905-2		7.0	
B7910A-6		5.0	
B7910A-7		5.0	
B7913-1		4.0	
B7914-2		5.0	
B7918-3		5.0	
B7925-3		5.0	
B7929-3		4.0	
B7929-11		5.0	
B8004-8	T/2	5.0	
B8018-2	T/2		
B8019-4	T/2		

Presque Isle Table I. Pedigrees tested in disease trials. 1975. contd.

Pedigree	Scab	Early Blight	Late Blight
B8019-7	T/2	5.0	
B8024-1	T/2		
B8036-1	T/1		
B8036-4	T/2		
B8050-4	T/2		
B8073-3	1/1	6.0	
B8076-3	2/2		
B8087-6	T/4		
B8088-2	1/2		
B8091-8	2/1		
B8101-3	T/2	5.0	
B8123-3	1/1	4.0	
B8123-11	T/2	4.0	
B8123-12	1/2	5.0	
B8125-5	T/3		
B8131-1	T/2		
B8132-4	T/3	3.0	
B8140-1	1/2		
B8148-4	2/3	4.0	
B8154-9	T/1		
B8176-6		5.0	
B8178-1	1/2	5.0	
B8178-4	2/2	5.0	
B8178-9		4.0	
B8178-12		3.0	
B8178-16		4.0	
B8180-2	1/2		
B8181-1	2/3	4.0	
B8181-3	T/2	5.0	
B8185-4	1/2		
B8185-5	T/2		
B8185-6	2/2		
B8185-11	1/2	4.0	
B8186-3	1/2		
B8188-1	T/2		
B8188-2	1/3		
B8188-6	1/2		
B8188-8	T/2		
B8188-9	T/3		
B8202-1	T/2		
B8206-2	3/2		
B8210-1	1/1		
B8210-2	2/2		

Presque Isle Table I. Pedigrees tested in disease trials. 1975. contd.

Pedigree	Scab	Early Blight	Late Blight
B8210-3	T/2		
B8212-1	T/1		
B8212-2	1/1		
B8214-4	T/1		
B8214-6	T/2		
B8214-9	T/2		
B8218-4	3/1		
B8221-2	1/2		
B8222-1	1/2	4.0	
B8222-3	1/2		
B8223-2	1/3		
B8229-1	1/2		
B8232-1	1/1	4.0	
B8235-5	T/2	5.0	
B8247-1	2/4		
B8261-3	T/3	5.0	
B8262-2	1/2		
B8264-1	T/3	6.0	
B8275-10	2/4		
B8275-15	2/3		
B8276-5	2/4		
B8276-13	1/2		
B8280-5	2/3		
B8280-8	1/2		
B8280-11	T/2	5.0	
B8280-13	1/1		
B8281-4	T/2		
B8281-5	2/1		
B8284-6	T/1		
B8285-1	T/2		
B8285-2	T/2		
B8285-3	T/1		
B8288-6	T/3		
B8289-4	1/3		
B8290-5	T/3		
B8302-1	1/2		
B8302-2	T/2		
B8302-3	1/2		
B8302-5	1/2		
B8304-1	1/2	4.0	
B8308-5	T/3		
B8308-6	1/1		
B8310-2	T/2		

Presque Isle Table I. Pedigrees tested in disease trials. 1975. contd.

Pedigree	Scab	Early Blight	Late Blight
B8310-13	0/0		
B8313-4	T/3	4.0	
B8314-5	T/3		
B8314-9	2/2		
B8316-3	1/3		
B8318-4	1/2		
B8331-3	T/2		
B8331-4	1/3		
B8332-2	T/3		
B8332-10	0/0		
B8336-3	T/1		
B8337-8	1/1		
B8338-6	T/3		
B8338-7	2/3		
B8339-1	T/2		
B8339-4	3/2		
B8345-5	1/1		
B8348-1	T/2		
B8348-4	T/2		
B8352-1	T/2		
B8352-3	T/2		
B8354-11	T/1		
B8356-1	T/1		
B8357-1	T/3		
B8357-2	1/3		
B8357-4	1/4		
B8358-1	T/2		
B8358-6	T/2		
B8359-2	4/2		
B8366-4	1/3		
B8372-2	T/2		
B8375-1	1/3		
B8375-2	1/2		
B8375-3	T/2		
B8375-5	T/3		
B8375-7	1/3		
B8377-2	0/0		
B8385-1	T/1		
B8392-4	1/2		
B8392-5	1/4		
B8392-6	1/3		
B8392-7	T/3		
B8393-1	T/4		

Presque Isle Table I. Pedigrees tested in disease trials. 1975. contd.

Pedigree	Scab	Early Blight	Late Blight
B8393-5	2/2	5.0	
B8393-6	1/2	4.0	
B8393-7	1/2	4.0	
B8393-8	T/2		
B8395-3	1/3		
B8395-5	1/2		
B8417-1			3.0
B8417-4			3.5
B8417-10			3.0
B8418-12			0.0
B8418-14			0.0
B8421-5			N.T.
B8423-5			0.0
B8423-6			N.T.
B8424-4			0.0
B8424-6			5.0
B8424-10			0.0
B8424-11			0.0
B8424-12			1.5
B8424-14			0.0
B8424-15			0.0
B8425-7			2.5
B8425-10			8.5
B8426-9			0.0
B8426-24			0.0
B8426-25			2.5
B8426-32			0.0
B8427-1			1.5
B8427-2			0.0
B8427-3			3.0
B8427-4			0.0
B8427-7			1.5
B8427-8			0.0
B8427-9			0.0
B8427-11			0.0
B8427-14			0.0
B8428-1			0.0
B8428-4			0.0
B8428-6			0.0
B8428-8			0.0
B8428-10			0.0
B8428-13			0.0
B8429-1			0.0

Presque Isle Table I. Pedigrees tested in disease trials. 1975. contd.

Pedigree	Scab	Early Blight	Late Blight
B8429-5			0.0
B8429-6			0.0
B8429-9			0.0
B8430-3			0.0
B8430-6			0.0
B8430-7			0.0
B8430-10			4.5
B8430-11			0.0
B8430-14			0.0
B8431-2			0.0
B8431-4			0.0
B8432-1			2.0
B8433-3			0.0
B8433-4			0.0
B8433-7			0.0
B8434-6			0.0
B8434-11			0.0
B8434-14			0.0
B8434-15			0.0
B8434-16			0.0
B8435-2			0.0
B8435-8			3.0
B8435-13			4.0
B8435-15			0.0
B8435-17			0.0
B8435-18			0.0
B8435-19			0.0
B8435-20			4.0
B8438-4			0.0
B8438-11			0.0
B8443-3			0.0
B8443-5			0.0
B8443-6			4.5
B8443-8			0.0
B8443-11			0.0
B8443-12			0.0
B8444-1			0.0
B8446-1			0.0
B8448-1			5.0
B8450-5			4.5
B8459-2			4.5
B8459-5			4.0
B8459-6			0.0

Presque Isle Table I. Pedigrees tested in disease trials. 1975. contd.

Pedigree	Scab	Early Blight	Late Blight
B8462-1			3.5
B8462-6			0.0
B8462-7			0.0
B8467-1			3.0
B8468-7			0.0
B8468-8			0.0
B8468-9			0.0
B8472-1			2.5
B8473-1			0.0
B8475-1			2.5
B8477-4			0.0
B8477-8			2.0
B8477-10			0.0
B8477-11			0.0
B8477-12			0.0
B8480-1			2.0
B8480-3			3.5
B8482-1			3.5
B8483-2			1.0
B8483-4			4.5
B8486-1			4.5
B8489-2			0.0
B8490-4			0.0
B8490-5			0.0
B8491-1			3.5
B8491-4			3.0
B8491-6			3.5
B8491-7			3.5
B8491-11			4.0
B8491-16			4.0
B8491-17			0.0
B8491-19			2.5
B8491-24			0.0
B8491-25			5.0
B8491-36			0.0
B8491-38			2.5
B8491-41			0.0
B8491-42			3.0
B8492-11			2.0
B8492-15			0.0
B8492-19			4.0
B8497-2			3.5
B8497-6			0.0

Presque Isle Table I. Pedigrees tested in disease trials. 1975. contd.

Pedigree	Scab	Early Blight	Late Blight
B8497-14			0.0
B8497-15			1.0
B8497-21			0.0
B8497-24			0.0
B8497-36			2.0
B8497-42			0.0
B8497-46			0.0
B8498-4			2.0
B8498-9			0.0
B8499-1			4.5
B8499-5			4.5
B8499-12			5.0
B8499-13			4.0
B8500-1			3.5
B8500-21			3.0
B8500-23			0.0
B8500-24			4.0
B8500-27			0.0
B8501-5			5.0
B8501-6			0.0
B8501-10			0.0
B8501-11			0.0
B8501-16			4.0
B8501-18			0.0
B8502-1			3.5
B8502-6			3.5
B8502-8			4.0
B8502-9			4.0
B8502-12			2.0
B8503-10			2.5
B8503-13			4.0
B8503-16			2.5
B8504-7			0.0
B8505-1			3.0
B8505-6			3.0
B8506-5			3.5
B8507-11			3.0
B8507-14			N.T.
B8509-1			0.0
B8509-2			0.0
B8509-5			0.0
B8509-13			2.5
B8509-15			4.5

Presque Isle Table I. Pedigrees tested in disease trials. 1975. contd.

Pedigree	Scab	Early Blight	Late Blight
B8509-17			8.0
B8509-25			0.0
B8510-9			4.5
B8512-9			4.5
B8514-1			8.0
B8514-4			4.5
B8514-7			1.0
B8514-12			0.0
B8514-13			0.0
B8514-18			0.0
B8519-4			6.0
B8522-7			3.0
B8522-11			0.0
B8522-15			0.0
B8524-1			0.0
B8524-4			4.5
B8524-9			0.0
B8524-20			0.0
B8524-21			0.0
B8524-22			2.5
B8524-23			0.0
B8524-26			0.0
B8524-29			0.0
B8524-32			0.0
B8525-2			0.0
B8525-3			0.0
B8525-5			3.5
B8525-10			3.5
B8525-18			3.5
B8527-3			0.0
B8527-4			0.0
B8528-1			0.0
B8528-3			0.0
B8528-4			0.0
B8529-3			4.5
B8529-4			4.0
B8529-6			0.0
B8529-12			0.0
B8529-15			0.0
B8529-17			0.0
B8529-22			0.0
B8530-4			0.0
B8530-7			0.0

Presque Isle Table I. Pedigrees tested in disease trials. 1975. contd.

Pedigree	Scab	Early Blight	Late Blight
B8530-8			0.0
B8530-9			0.0
B8536-7			0.0
B8536-8			0.0
B8538-3			4.0
B8540-2			0.0
B8540-7			4.5
B8540-12			3.0
B8541-2			3.5
B8542-1			3.5
B8542-2			4.0
B8542-4			0.0
B8542-5			4.0
B8542-7			4.0
B8542-8			3.5
B8542-10			3.0
B8542-12			0.0
B8542-13			0.0
B8542-14			3.0
B8542-16			0.0
B8542-22			3.0
B8542-35			3.5
B8543-4			3.5
B8543-6			3.5
B8543-9			0.0
B8543-11			2.5
B8543-16			4.0
B8543-19			4.0
B8543-26			2.5
B8545-1			3.5
B8545-8			0.0
B8545-15			3.5
B8545-18			3.0
B8545-19			3.5
B8546-5			0.0
B8546-6			0.0
B8546-7			2.5
B8547-3			2.5
B8547-8			4.0
B8547-10			0.0
B8548-20			4.5
B8548-21			5.0
B8552-4			3.0

Presque Isle Table I. Pedigrees tested in disease trials. 1975. contd.

Pedigree	Scab	Early Blight	Late Blight
B8553-10			4.0
B8553-18			N.T.
B8553-20			0.0
B8556-2			0.0
B8563-1			4.0
B8566-4			0.0
B8567-5			0.0
B8567-11			0.0
B8567-14			0.0
B8568-9			5.0
B8568-19			4.5
B8568-21			3.0
B8568-25			0.0
B8573-1			3.0
B8573-2			0.0
B8573-3			4.5
B8574-10			0.0
B8575-4			0.0
B8575-5			3.5
B8577-1			4.5
B8578-4			9.0
B8578-8			3.0
B8578-20			0.0
B8578-21			3.5
B8579-1			3.5
B8579-3			0.0
B8579-4			3.5
B8579-15			0.0
B8581-1			3.0
B8581-3			0.0
B8582-2			3.5
B8584-1			2.0
B8586-1			3.5
B8588-1			4.0
B8588-4			0.0
B8589-2			3.0
B8590-3			0.0
B8590-5			0.0
B8590-7			0.0
B8590-11			0.0
B8596-3			3.5
B8596-4			0.0
B8598-5			0.0

Presque Isle Table 1. Pedigrees tested in disease trials. 1975. contd.

Pedigree	Scab	Early Blight	Late Blight
B8598-8			0.0
B8598-9			4.0
B8599-4			0.0
B8599-5			3.5
B8599-16			4.0
B8599-18			0.0
B8599-33			0.0
B8599-39			5.0
B8599-40			3.5
B8599-42			0.0
B8599-45			0.0
B8604-1			4.0
B8612-1			3.5
B8612-2			4.0
B8614-5			0.0
B8614-10			0.0
B8614-12			3.5
B8615-1			0.0
B8615-2			0.0
B8616-3			4.5
B8616-7			3.5
B8618-2			0.0
B8618-5			4.5
B8618-6			0.0
B8625-11			0.0
B8625-13			4.0
B8625-15			0.0
B8625-16			3.5
B8626-2			0.0
B8639-3			4.0
B8641-1			0.0
B8641-8			0.0
B8642-2			4.0
Green Mountain	1.5/2.5		
Cherokee	T/2		
Russet Burbank	T/1		
Superior	T/2		3.0
Pungo			0.0
Sebago			3.0
Kennebec		4.0	0.0
Cobbler		5.0	
Norgold Russet		5.0	

Presque Isle Table I. Pedigrees tested in disease trials. 1975. contd.

Pedigree	Scab	Early Blight	Late Blight
AC26615-1	1/1		
AC26615-7	3/1		
AC26615-22	T/1		
AC26616-1	T/2	5.0	
AC26619-1	1/1		
AC26619-2	T/2	5.0	
AC26619-3	1/2	4.0	
AC26619-4	T/2		
AC26619-5	T/2	6.0	
AC26619-6	T/1		
AC26619-7	0/0		
AC26619-8	1/1		
AC26619-9	T/2		

INTERREGIONAL POTATO INTRODUCTION PROJECT (IR-1)

R. W. Ross and R. E. Hanneman, Jr.

Introduction of New Stocks. One hundred nine new stocks were received from four countries (Argentina, Germany, India, Mexico). Most were true seed introductions of Argentine species provided by the collector, K. A. Okada, from the INTA germplasm collection maintained at the Balcarce regional station, Argentina.

Preservation and Increase of Stocks. Approximately 90% of the introductions now contained in the collection are maintained as true seed. Satisfactory seed increases of 179 species introductions and intraspecific hybrids were obtained under glass, plastic, or screen. Recently harvested seed samples of 161 species introductions were packaged for storage in the National Seed Storage laboratory.

Germination percentages of 1811 seed lots 2-20 years old were determined. A fifty-seed sample of 383 seed increase lots were grown to detect mechanic admixtures that can happen in the course of the extraction and packaging process.

Classification. The 355 herbarium specimens from 103 seedling populations, collected and prepared earlier, were mounted and labeled for authentication and annotation by visiting taxonomists, and inclusion in the IR-1 herbarium.

Distribution of Stocks. Seed and tuber shipments were sent to potato workers in 20 states within this country and in 23 other countries. Shipments included 1931 seed and 2027 tuber samples of species introductions, and 31 seed and 919 tuber samples of germplasm developed by the cooperative USDA-Wisconsin Genetics and Cytogenetics Project, involving species introductions.

A mimeographed listing of 222 species introductions available in the form of tuber families (mainly for the benefit of those without adequate greenhouse facilities) was distributed to 176 potato workers.

Evaluation of Stocks. Seedling populations of about 180 species introductions were evaluated in the field of tuberization response to length of day, and for tolerance to freezing temparatures.

More recent introductions are being steadily evaluated for characters of economic importance through the cooperative efforts of state, federal, and foreign laboratories.

Usefulness of Findings. The major objective of the Potato Introduction Project is to promote and facilitate the improvement of the commercial potato in the United States by providing a readily available reservoir of useful breeding stocks. Breeders are constantly searching for new sources of superior germplasm and are conducting incessant researches to incorporate desirable new genes into adapted commercial varieties. Accomplishment of the major objective of this program must be measured largely by the success with which new, improved varieties meet the needs of commercial production.

One hundred thirty-one of the 135 potato varieties developed and released in the United States since 1932 have two or more foreign introductions in their pedigree. These varieties presently compose about 65% of the annual seed potato production in the United States.

Basic research programs conducted in several states and other countries continue to provide information concerning the potential value and diversity of the Solanum species, and consequently the knowledge necessary for more effective utilization of the IR-1 germplasm collection. In 1975, approximately 32 papers, 16 abstracts, and 6 theses reported the use of Solanum introductions.

NORTH DAKOTA

R. H. Johansen and Cooperators[1/]

North Central Regional Potato Trials - 1975

In conjunction with the Bicentennial of our country and the numerous cities celebrating a centennial the North Central Regional Potato Variety Trials have likewise met a milestone. 1975 was the 25th year that the North Central Regional Potato Trials have been in existence. The trial had its early beginning in 1951 with only five states participating. Now there are 10 states and at one time when Indiana participated there were eleven. Next year, two provinces in Canada, Manitoba and Alberta, will join the North Central Regional Potato Trials.

The North Central Regional Trials have been beneficial in testing and evaluating advanced potato selections over a wide range of environmental conditions. The trials have also been beneficial in that they point out the weaknesses and the strong points of a certain advanced selection and give the cooperator an opportunity to become familiar with a certain clone long before they are released as named varieties.

The importance of the trials can also be measured by its accomplishments over the years. Since 1951, 34 named potato varieties had their introduction into the world when they were first tested in the North Central Regional Potato Trials as numbered clones or selections. In the 1975 listing of certified potato varieties grown in the United States and Canada, 20 varieties that were first tested in the North Central Regional Trials are still being grown. Among these are Superior, Norchip, Norgold Russet, and Norland which are listed in the top 10 of U.S. Certified seed potato varieties. In addition to the importance of variety releases Nebraska has for several years, obtained samples from all North Central Regional Trial entries and has accumulated genetic data regarding factors affecting post harvest quality of potatoes.

Environmental Conditions. Soil type ranged from clay loam to course sand. Sandy loam was the most common soil type.

Cultural Practices. Fertilizer applications, irrigation, spray programs, vine killing, spacing, etc., were based on local conditions. Insecticides used were Thimet, Temik, Dithane chlordane, Sevin, Monitor Thiodan, and Cygon. Sevin seemed to be used the most. Fungicides used were Bravo, Dithane M-45, Z-78, Maneb, Manzate and Copper sulfate. Lorax and Eptam were the common herbicides used. Vines were either killed by chemicals, roto beating, rotary mower, or chopped. Chemicals used to kill the vines were Dinitro Plus oil and Paraquat.

Several states used irrigation to supplement rainfall. States that irrigated were Ohio, Nebraska, Minnesota, Wisconsin, South Dakota and Michigan.

1/ Kansas, J. Greig; Louisiana, J. Fontenot; Michigan, N. Thompson; Minnesota, F. Lauer; Missouri, V. Lambeth; Nebraska, R. O'Keefe; North Dakota, R.H. Johansen; Ohio, A. R. Mosley; South Dakota, P. Prashar; Wisconsin, J. Shoeneman, D. Kichefski and S. Peloquin; uSDA, R. Webb; Alaska, C. Dearborn.

State	Date Planted	Date Harvested	Total Days to Harvest
Kansas	3/31	7/22	144
Louisiana	2/6	6/11	156
Michigan	5/8	9/9	145
Missouri	4/7	8/21	147
Minnesota	5/6	8/26	113
Neb. (late summer)	4/22	7/25	95
Neb. (late fall)	5/10	9/17	130
North Dakota	5/20	10/1	134
Ohio	5/8	9/23	139
South Dakota	5/6	9/22	140
Wisconsin	5/7	9/23	140

Weather conditions again varied in 1975. It was hot and dry during June, July and part of August in Ohio and Nebraska while it was wet early in the season in Louisiana, Kansas and North Dakota with moderate to good precipitation in South Dakota and Minnesota. Michigan had warm temperatures during the early part of the season and relatively cool temperatures later in the season. Wisconsin had 16.2 inches of rainfall during the season.

Entries. Entries were received from Wisconsin, Nebraska, North Dakota, Louisiana, Minnesota, Alaska and Michigan. Russet Burbank was added as a check variety in 1975 along with Norchip, Norland and Red Pontiac. North Dakota supplied all the check varieties. Nebraska again planted two trials; one in Alliance and one in Gibbon.

Yield. Total and U.S. No. 1 yield are reported in North Central Tables one and two. Trials in Michigan and Wisconsin produced the highest yields. Lowest yields were reported in Louisiana and this no doubt can be contributed to the high rainfall that occurred during the season. South Dakota produced higher yields than in the past.

Red Pontiac again produced the highest total and U.S. No. 1 yield. Other high yielding entries were Alaska 5 and Wisc. 729 R Several other entries also produced relatively high yields (North Central Tables 1 and 2).

Maturity. Norland was the earliest entry in the trials while Russet Burbank, Wisc. 718 and Wisc. 729R were the latest. Only two clones, Minn.4858 and 5072 were reported to be late but actually were as early as the early check variety, Norchip. Maturity is reported in North Central Table 3.

Total Solids. Norchip was found to have the highest total solids. Total solids are reported in North Central Table 4. Norland and ND8947-2Russ were the lowest in total solids.

Scab Reactions. Kansas and Nebraska (late fall) again reported the highest incidence of scab. However several states didn't report scab and it was assumed that either they didn't have scab or it wasn't scored. Red Pontiac and MS711-8 seemed to be the most susceptible while several selections showed scab resistance similar to Norland. Scab reactions are found in North Central Table 5.

Internal and External Defects. A summary of grade defects, are found in North Central Table 6. A particular weakness of a variety or clone is starred only to call it to the breeders attention. Russet Burbank had only 51.9% of its tubers free of total external defects (North Central Table 6); 43% of the Russet Burbank variety had second growth.

Chip Quality. Chip quality is found in North Central Table 7. Not all states reported chip quality and this probably was due to the fault of the coordinator who didn't list chip quality on the data forms. It is hoped that next year everybody will make a real effort to chip all of the North Central entries. Several entries had chip quality quite comparable to Norchip. They were Wisc. 718 and 726, ND8888-2 and 8891-3 and La 01-70 and La 11-24.

Overall Annual Merit Ratings. Merit Ratings are presented for 1973, 1974 and 1975.

Variety	1973	1974	1975
1. Wisc. 718		12	26
2. Alaska 5			20
3. Norchip			19
4. ND8891-3			16
4. Wisc. 729R		15	16
5. Wisc. 726			15

It is interesting to note that all of the Wisconsin entries were listed in the first five in total merit points. This is the first time that a state has all of its entries in the top five, which is another first.

North Central Table 1. Total Yield (Cwt Per Acre).

Variety Early to Medium Early	Kansas	La.	Mich.	Mo.	Minn.	Neb.[1/] Late Summer	Neb. Late Fall	No. Dak.	Ohio	So. Dak.	Wisc.	Ave.
Ia 1111-2			330		128	218	213	147	238	154	292	215.0
Norland	238	74	356	232	233	369	447	182	294	335	368	284.8
Norchip	332	104	375	217	311	386	474	236	417	513	443	346.2
Medium to Late												
Wisc. 718	190	112	490	183	259	314	547	194	357	410	565	329.2
Wisc. 726	306	114	462	271	318	294	465	194	365	450	510	340.8
Wisc. 729R	246	74	461	233	333	370	512	200	469	494	534	356.9
Neb. 43.66-1	234	77	441	165	309	285	381	209	387	469	487	313.1
Neb. 42-1	140	49	377	184	261	253	317	144	383	292	443	258.5
ND8888-2	266	121	410	290	335	360	551	237	381	447	495	353.9
ND8891-3	253	140	459	202	380	359	361	240	313	520	603	348.2
ND8947-2Russ	244	84	397	144	120	223	336	192	217	277	422	241.5
La. 01-70	240	136	465	256	304	327	466	178	332	362	541	327.9
La. 11-24	291	130	405	200	318	317	503	216	282	323	434	310.8
La. 11-118	279	166	510	186	317	356	470	194	419	407	653	359.7
Minn. 3866	291	148	461	247	298	310	441	221	375	436	526	341.3
Minn. 4858	273	134	439	220	243	300	456	216	311	428	509	320.8
Minn. 5072	157	97	332	173	272	209	341	163	256	313	359	242.9
Alaska 5	320	141	501	252	428	389	456	260	375	410	526	368.9
MS 711-8			462		304	315	391	164	312	305	417	333.8
Red Pontiac	280	127	649	296	387	429	536	261	395	518	623	409.2
Russet Burbank	247	72	465	213	323	307	417	141	395	397	564	321.9
B6987-56								242				
Average	254	111	440	219	294	319	432	201	346	393	491	

[1/] Nebraska trial planted at Gibbon on April 22 and harvested on July 25th and at Alliance on May 10th and harvested September 17.

North Central Table 2. U.S. No. 1 Yield (Cwt. per acre).

Variety Early to Med. Early	Kansas	La.	Mich.	Mo.	Minn.	Neb. Late Summer	Neb. Late Fall	No. Dak.	Ohio	So. Dak.	Wisc.	Ave.
Ia 111-2			299		120	145	72	135	186	148	273	172.2
Norland	194	60	333	229	220	265	286	175	238	327	350	243.4
Norchip	269	89		213	291	193	313	222	271	498	417	280.0
Med. to Late												
Wisc. 718	144	93	474	177	238	239	343	184	315	402	551	287.3
Wisc. 726	261	103	443	266	288	227	214	180	306	445	500	293.9
Wisc. 729R	189	61	438	224	317	305	327	185	392	480	511	311.7
Neb. 4366-1	142	69	392	158	279	172	274	186	317	452	473	264.9
Neb. 42-1	66	37	323	172	188	113	63	117	238	261	399	179.7
ND 8888-2	211	76	362	282	316	226	289	209	265	421	481	285.3
ND 8891-3	143	103	409	194	323	210	231	219	246	496	572	286.0
ND 8947-2R	172	76	337	141	96	115	144	176	92	256	361	178.7
La 01-70	184	105	390	249	284	227	340	163	229	346	530	277.0
La 11-24	230	106	367	196	292	201	332	201	236	313	410	262.2
La 11-118	190	126	471	169	265	171	324	175	257	383	617	286.2
Minn. 3866	159	99	407	236	269	160	331	200	282	410	468	274.6
Minn. 4858	189	80	405	217	210	185	310	203	244	421	492	268.7
Minn. 5072	103	73	306	166	249	132	232	151	189	306	347	204.9
Alaska 5	237	67	461	240	393	283	374	244	261	392	490	312.9
MS 711-8			442		258	191	266	149	271	295	403	284.4
Red Pontiac	244	116	625	286	365	340	284	253	299	504	603	356.3
Russet B	156	61	416	64	240	89	108	114	76	371	540	203.2
B6987-56								237				
Average	183	84	400	204	262	199	260	185	248	377	466	

North Central Table 3. Maturity Classification. 1/

Variety	Kansas	La.	Mich.	Mo.	2/ Minn.	Neb. Late Summer	Neb. Late Fall	No. Dak.	Ohio	So. Dak.	Wisc.	Ave.
Early to Med. Early												
Ia 1111-2			1.0			3.5	3.5	3.3	2.5	2.0	3.0	2.7
Norland	1.2	2.0	1.0	1.5		2.7	2.2	1.8	2.0	1.0	1.0	1.6
Norchip	3.5	3.0	3.0	2.8		3.0	2.7	2.0	3.3	3.0	1.0	2.7
Med. to Late												
Wisc. 718	4.7	5.0	4.0	3.5		4.0	3.2	4.5	2.5	4.0	5.0	4.0
Wisc. 726	4.0	4.0	3.0	3.0		3.0	2.7	3.9	2.8	1.0	3.0	3.0
Wisc. 729R	4.0	5.0	4.0	3.8		3.7	4.0	4.0	4.5	4.0	4.0	4.1
Neb. 43.66-1	4.5	4.0	4.0	4.2		4.2	4.0	4.3	3.5	4.5	2.0	3.9
Neb. 42-1	4.2	5.0	4.0	4.8		5.0	3.0	4.5	2.8	4.0	4.0	4.1
ND 8888-2	3.2	2.0	3.0	3.0		3.0	2.5	3.5	2.5	4.0	4.0	3.1
ND 8891-3	3.2	4.0	2.0	2.7		2.7	3.2	4.0	2.3	3.5	4.0	3.2
ND 8947-2Russ	3.0	2.0	3.0	3.6		3.7	3.0	4.0	2.0	3.5	3.0	3.1
La 01-70	4.2	3.0	4.0	3.0		3.0	3.2	4.3	3.3	4.5	2.0	3.5
La 11-24	3.0	2.0	3.0	3.8		4.0	3.7	3.3	2.5	4.0	1.0	3.0
LA 11-118	4.2	3.0	4.0	3.6		3.7	4.0	4.0	4.5	4.0	4.0	3.9
Minn. 3866	4.0	5.0	4.0	2.8		2.7	3.2	3.6	1.0	3.5	3.0	3.3
Minn. 4858	2.5	2.0	2.0	3.5		3.5	3.0	2.4	1.0	3.5	4.0	2.7
Minn. 5072	2.0	2.0	2.0	3.7		3.5	3.0	2.9	2.5	3.5	4.0	2.9
Alaska 5	3.5	3.0	4.0	3.5		3.5	4.0	4.0	4.3	4.0	4.0	3.8
MS 711-8			5.0			3.7	3.0	4.5	2.5	3.0	3.0	3.5
Red Pontiac	5.0	4.0	4.0	3.8		3.0	3.5	3.3	2/	4.5	3.0	3.8
Russet B	5.0	5.0	5.0	4.0		4.0	4.2	5.0		4.0	4.0	4.4
B6987-56								4.0				

1/ 1 - Very early - Norland maturity.
2 - Early - Irish Cobbler maturity.
3 - Medium - Red Pontiac maturity.
4 - Late - Katahdin maturity.
5 - Very late - Kennebec or Russet Burbank maturity.

2/ No data

North Central Table 4. Total Solids (%)

Variety	Kansas	1/ La.	Mich.	Mo.	Minn.	Neb. Late Summer	Neb. Late Fall	No. Dak.	Ohio	So. Dak.	Wisc.	Ave.
Early to Med. Early												
Ia 1111-2			16.7		15.8	16.5	17.3	21.4	16.0	16.4	16.0	17.0
Norland	18.5	15.2	15.8	15.6	14.5	14.8	20.5	20.7		17.0	14.1	16.8
Norchip	21.3	15.2	20.1	20.3	18.6	18.2	22.6	22.4	17.7	20.5	18.8	20.0
Med. to Late												
Wisc. 718	18.5	15.2	18.2	18.1	16.5	17.3	19.7	20.9	16.9	18.8	16.9	18.2
Wisc. 726	21.3	15.2	20.1	18.7	17.3	18.2	22.9	20.7	16.7	21.2	18.4	19.6
Wisc. 729R	19.6	15.2	20.3	17.6	17.5	17.7	20.5	20.8	17.3	19.7	18.8	19.0
Neb. 43.66-1	19.2	15.2	16.7	15.7	15.8	15.6	18.2	18.6	15.8	17.9	15.6	16.9
Neb. 42-1	23.1	15.2	19.2	17.9	19.5	18.4	19.9	19.2	15.4	21.1	19.0	19.3
ND 8888-2	20.2	15.2	18.4	19.1	17.5	18.4	19.4	22.4	16.0	19.4	17.1	18.8
ND 8891-3	21.0	15.2	17.1	17.3	18.2	17.7	17.7	22.0	15.4	19.5	20.1	18.6
ND 8947-2	18.7	15.2	16.0	15.5	13.5	15.8	18.4	19.9	2/	16.6	15.0	16.6
La 01-70	22.0	15.2	20.3	19.5	19.0	18.2	20.9	21.2	16.7	19.6	18.6	19.6
La 11-24	21.2	15.2	18.6	19.0	18.4	18.0	19.0	22.2	16.0	17.1	18.6	18.8
La 11-118	20.8	15.2	18.8	18.4	17.5	17.0	22.0	21.6	2/	18.1	18.4	19.2
Minn. 3866	22.2	15.2	19.4	19.5	18.2	18.4	21.8	22.0	18.0	19.1	18.8	19.7
Minn. 4858	21.0	15.2	17.7	18.4	15.8	16.2	20.7	21.8	15.8	17.1	16.0	18.1
Minn. 5072	19.6	15.2	16.7	15.7	14.5	15.2	19.4	20.5	2/	17.1	15.6	17.1
Alaska 5	19.0	15.2	18.6	18.2	18.4	18.4	22.2	21.8	16.5	19.9	18.4	19.1
Ms 711-8		15.2	18.2		16.5	16.0	19.4	20.9	15.4	18.9	15.6	17.6
Red Pontiac	1,.9	15.2	17.3	15.3	14.8	15.2	19.0	20.5	18.2	17.2	15.4	17.1
Russet B	21.2	15.2	20.7	18.6	18.4	18.6	21.8	20.3	16.9	20.7	20.3	19.8
B6987-56								22.9				
Average	20.3	15.2	18.3	17.8	17.0	17.1	20.2	21.1	16.5	18.7	17.4	

1/ Data not used in average (all entries were 15.2%)
2/ No data reported

North Central Table 5. Scab Reactions Report 1/ (most representative scab-area-type)

Variety	Kansas	La.	Mich.	2/ Mo.	2/ Minn.	Neb. Late Summer	Neb. Late Fall	No. Dak.	Ohio	2/ So. Dak.	Wisc.
Early to Med. Early											
Ia 1111-2			0-0				0-0	1-1			3-
Norland	3-1	0-	0-0			1-2	1-3	1-1			2-
Norchip	1-1	T-	0-0				0-0	T-1	2-2		
Med. to Late											
Wisc. 718	2-1	T-	0-0			1-2	0-0	T-1			
Wisc. 726	2-1	0-	1-5			1-1	0-0	T-1			
Wisc. 729R	2-1	T-	1-5			1-2	1-2	T-1			
Neb. 43.66	3-1	0-	0-0			1-1	1-3	T-1	T-5		
Neb. 42-1	1-1	0-	0-0				1-2	4-2	2-1		
ND 8888-2	2-1	0-	0-0				1-2	T-1			
ND 8891-3	1-1	T-	0-0				1-2	T-1			
ND 8974-2Russ	1-1	0-	0-0				1-3	T-1	2-2		3-
La 01-70	3-1	0-	1-5				0-0	T-1	1-3		4-
La 11-24	2-1	T-	1-5				1-2	1-1	T-1		
La 11-118	3-1	0-	1-5				0-0	1-1	2-2		
Minn. 3866	2-1	T-	0-0			1-2	1-2	1-2			3-
Minn. 4858	1-1	0-	0-0			1-2	0-0	2-2			
Minn. 5072	2-1	0-	0-0			1-2	1-3	3-2			
Alaska 5	2-1	0-	1-5				1-2	T-1			4-
MS 711-8	-	-	1-5				0-0	4-3	T-2		2-
Red Pontiac	4-1	0-	1-5				1-2	2-1			3-
Russet B	1-1	0-	0-0				0-0	T-1			
B6987 -56	-	-	-			-		T-1	-		

1/ Area

T - less than 1%
1 - 1-20%
2 - 21-40%
3 - 41-60%
4 - 61-80%
5 - 81-100%

Type

1. Small, superficial
2. Larger, superficial
3. Larger, rough pustules
4. Larger pustules, shallow holes
5. Very large pustules, deep holes

2/ No data

North Central Table 6. Summary of Grade Defects (%)

Variety	External					Internal			
Early to Med. Early	Scab	Growth Cracks	Second Growth	Sun Green	Total 1/ Free of Ext. Def.	Hollow Heart	Internal Necrosis	Vascular Discolor-ation	Total 1/ Free of Int. Def.
Ia 1111-2	7.5	6.8	6.0	4.3*	77.0	1.2	.1	6.8*	92.0
Norland	4.6	3.9	3.9	1.8	88.1	3.1	1.5	2.3	93.4
Norchip	2.4	6.9	7.9	3.9	79.3	.7	3.7	5.9	89.9
Med. to Late									
Wisc. 718	3.9	1.8	2.3	3.1	91.0	4.8*	3.5	.6	91.2
Wisc. 726	5.9	2.4	2.6	1.7	89.4	1.5	1.7	9.7*	86.4
Wisc. 729R	4.8	2.5	2.1	.5	92.6	1.3	1.5	2.9	94.5
Neb. 43.66-1	5.1	5.3	7.5	.7	84.5	1.5	8.2*	2.9	87.6
Neb. 42-1	4.8	8.1*	6.5	1.0	83.8	2.9	2.3	8.4*	85.9
ND 8888-2	2.0	5.5	10.2*	1.2	81.9	.4	5.3	6.1	88.0
ND 8891-3	3.5	5.9	6.5	2.0	83.1	2.5	1.5	3.8	93.0
ND 8947-2Russ	8.9	5.2	11.4*	.5	77.5	3.2	3.8	2.4	91.0
La 01-70	8.8	3.7	3.1	1.8	88.1	2.1	2.3	2.4	93.2
La 11-24	7.5	2.9	2.5	3.1	83.0	6.5*	.9	1.9	91.1
La 11-118	8.1	2.8	5.2	1.2	83.4	.4	.5	4.6	94.6
Minn. 3866	7.3	8.1	4.0	1.5	84.0	.8	1.2	1.5	96.7
Minn. 4858	4.0	12.7*	2.4	.9	83.2	.5	1.3	4.4	93.6
Minn. 5072	5.5	7.5	1.8	.4	87.3	.2	2.7	4.6	92.9
Alaska 5	5.7	3.6	3.7	.5	90.7	.1	2.5	6.6*	88.5
MS 711-8	21.1*	4.9	3.5	2.1	75.3	1.4	1.5	6.6*	88.4
Red Pontiac	10.6	6.7	4.8	.6	83.4	.1	.7	3.2	96.0
Russet B B6987-56	1.1	3.9	43.1*	2.5	51.9	.6	2.0	.5	96.8

1/ - Percent normal tubers showing no defects (some individual tubers had more than one type of defect.

* - Possible weakness of a variety.

North Central Table 7. Chip Quality

Variety	3/	1/	3/	3/	3/	1/ Neb.	1/ Neb.	2/	3/	3/	1/
Early to Med. Early	Kansas	La.	Mich.	Mo.	Minn.	Late Summer	Late Fall	No. Dak.	Ohio	So. Dak.	Wisc.
Ia 1111-2						3		38.5			8
Norland		5.0				7	4	40.5			7
Norchip		4.8				3	3	47.5			4
Med. to Late											
Wisc. 718		3.3				3	4	41.0			4
Wisc. 726		3.3				2	3	43.0			3
Wisc. W729R		4.0				4	8	26.0			6
Neb. 43.66-1		7.0				5	6	28.5			6
Neb. 42-1		4.8				4	6	19.5			8
ND 8888-2		5.5				3	4	40.0			4
ND 8891-3		6.0				4	4	42.0			4
ND 8947-2Russ		5.0				7	5	22.0			9
La 01-70		4.0				3	4	35.0			4
La 11-24		4.5				3	3	45.0			5
La 11-118		3.0				3	6	30.5			5
Minn. 3866		4.8				4	5	31.5			6
Minn. 4858		2.8				4	4	29.5			8
Minn. 5072		5.0				4	6	32.5			7
Alaska 5		5.5				4	4	29.5			6
MS 711-8						3	5	33.0			6
Red Pontiac		7.0				6	7	24.0			9
Russet Burbank		6.3				4	4	29.0			6
B6987-56								40.0			

1/ PCII Color Chart (1 lightest 10 darkest)

2/ Agtron (highest number lightest)

3/ No data

North Central Table 8. Merit Ratings[1/]

Variety Early to Med. Early	Kansas	La.	Mich.	Mo.	Minn.	Neb. Late Summer	Neb. Late Fall	No. Dak.	Ohio	So. Dak.	Wisc.	Total
Ia 1111-2												
Norland		1				2		4				7
Norchip	5	2		3				1	3	5		19
Med. to Late												
Wisc. 718		4	3	5	2	1	4	2	5			26
Wisc. 726	4		2	4					4	1		15
Wisc. 729R	1				1	4		3	1	2	4	16
Neb. 43.66-1									2			2
Neb. 42-1					4						2	6
ND 8888-2				1								1
ND 8891-3					3			5		3	5	16
ND 8947-2Russ											3	3
La 01-70			1				3					4
La 11-24							1					1
La 11-118	2	5	5									12
Minn. 3866		3					2				1	6
Minn. 4858				2								2
Minn. 5072												0
Alaska 5	3		4		5	3	5					20
MS 711-8												
Red Pontiac						5				4		9
Russet B												
B6987-56												

1/

Merit Points determined as follows

Merit Rating	Merit Points
1	5
2	4
3	3
4	2
5	1

WISCONSIN

R. E. Hanneman, Jr.

Genetics and Cytogenetics of the Tuber-Bearing Solanum Species
(Cooperative ARS, USDA and Wisconsin Station)

Identification of the extra chromosomes of trisomics in Solanum chacoense. Four secondary trisomics, identified by pachytene analysis in Solanum chacoense, were analyzed with the Giemsa stain technique. The clones V1700.8 and V1700.24, which according to pachytene analysis are secondary trisomics for the long and short arm of chromosome IV respectively were identified as secondary trisomics for the long and short arm of chromosome C respectively, in Giemsa stained somatic cell. The clone V1700.1, a secondary trisomic for the long arm of chromosome IX, is identified as having an entire isochromosome for the long arm of chromosome F. The clone V1700.4, a secondary trisomic for the short arm of chromosome IX, has an extra isochromosome for the short arm of chromosome F. Chromosome IV and IX in pachytene correspond to chromosome C and F, respectively, in Giemsa stained somatic cell. It was possible to locate the centromere of the chromosomes using two pairs of the secondary trisomics. The extra chromosome of the trisomic clone V1682.1 was also identified with pachytene analysis as chromosome II.

Chromosome Numbers of Progeny Resulting from Haploid Extraction in Solanum tuberosum Group Andigena. During the past year considerable effort has been devoted to the extraction of haploids from S. tuberosum Group Andigena. The original introductions were chosen because of their desirable characteristics with over 50 different introductions being selected. The tetraploid Group Andigena clones were used as females in crosses with clone 1.22. Triploids and haploids occurred at the same rate overall in a population from which tetraploids had presumably been excluded based on phenotype. In some families, triploids accounted for a majority of the progeny.

Bulk Populations of Solanum species. Bulk populations of a number of different species, interspecific, and species-haploid hybrids were grown out this year. These populations were all in their fourth or fifth generation. One group had been subjected to a single cycle of selection for tuberization during the second generation followed by two cycles of sib-mating. The other group was sib-mated throughout all generations with no selection for tuberization. Early selection for tuberization was effective in improving tuberization as compared to continuous sib-mating over a similar period.

ALABAMA

J. L. Turner, Harrison Bryce and Hubert Harris - Main Station
J. E. Barrett, R. N. McDaniel, John T. Owen III and
Frank E. Garrett - Gulf Coast Substation
Marlin H. Hollingsworth - North Alabama Horticulture Substation
John Eason and Frank Lowery - Sand Mountain Substation

Irish Potato Variety Trials, Sand Mountain Substation, Crossville and Gulf Coast Substation Fairhope, Alabama

Experimental Procedure. Seed potatoes were obtained from Frito Lay Company Baldwin County Alabama, North Dakota, USDA and Wisconsin for the 1975 trials. Ten named varieties and 16 numbered selections were grown this year for yield trials and chip processing. Each entry was replicated 4 times in a randomized block design. Plots were 20 feet by 38 and 44 inches at Fairhope and Crossville respectively. Seed pieces were cut to approximately 1-1/2 ounces each and dipped in a solution containing 1 pound of Benlate in 50 gallons of water, dried, calloused, and presprouted at 55°F. for approximately 2 weeks and planted February 26 at Fairhope and March 3 at Crossville. Plots were harvested June 5 at Fairhope and July 2 at Crossville. The growing days were 100 and 122 respectively.

Results. Yields were higher for Red La Soda, B 7139-4 and B 6987-56 at Fairhope than for Crossville. B 7139-4 was the highest yielding entry at Fairhope and Red La Soda and B 6987-56 were the two highest yielding entries at Crossville. B 6987-56 performed well again this year at both locations. This line appears to be well adapted to Alabama conditions. Potatoes of this line are generally round with some russet skin patterns. An occasional eye will be surrounded by a large smooth depressed area. Eye appeal for B 6987-56 has been good. It has out yielded La Chipper, Norchip, Superior and most of the other entries for the past several years. Red La Soda from North Dakota and Wisconsin yielded higher than the other red entries. Red La Soda and La Rouge were rated higher for eye appeal than the other red entries. Two entries were rated 5 for eye appeal, B 7679-9 a long russet skin potato and B7669-2 a long white potato. Norchip and Superior produced fair yields at both locations. Superior produced high quality potatoes for both fresh market and processing.

Specific gravity was generally higher for the Crossville trial than for Fairhope. B 6987-56 had the highest specific gravity at Fairhope. B 6987-56 and B 7139-4 were highest and equal for specific gravity at Crossville. Several varieties produced specific gravities above 1.090.

Table 1. Potato Variety Trials, Crossville and Fairhope, 1975[1]

Variety	Marketable yield/acre Total	Size A[2]	Size B	Specific gravity	Eye depth[3]	Eye size[4]	Skin color[5]	Shape	Eye appeal[6]
	Cwt.	Cwt.	Cwt.						
				Crossville					
Red La Soda - North Dakota	284	264	20	1.074	D	L	Red	Round	3.5
B6987-56	266	247	19	1.094	S	S	Wh-SR	Round	4.0
Red La Soda - Wisconsin	263	243	20	1.076	D	L	Red	Round	3.5
B6987-29	256	239	17	1.091	S	S	Wh	R-flat	3.0
B7603-1	252	233	19	1.080	M	M	Pink	Oval	3.0
Wisconsin 729R	252	217	35	1.080	D	L	Red	Round	3.0
B7139-4	238	225	13	1.094	S	S	Wh	R-flat	2.5
B7152-14	235	214	21	1.077	S	S	Wh	Round	4.0
Frito Lay 795	229	207	22	1.093	M	M	Wh	R-flat	3.0
Kennebec	227	199	28	1.083	S	S	Wh	R-long	2.5
La Rouge Wisconsin	220	200	20	1.082	D	L	Red	Round	3.5
Wischip (Wis. 623)	208	179	29	1.086	S	S	Wh	Round	4.0
La Chipper - Wisconsin	193	163	30	1.084	M	M	Wh	R-flat	3.5
La Chipper - North Dakota	191	166	25	1.084	M	L	Wh	R-flat	4.0
B7679-9	181	151	30	1.090	S	S	Russet	Long	5.0
Frito Lay 162	179	153	26	1.090	S	S	Wh-SR	Round	4.0
Superior Wisconsin	178	159	19	1.086	M	M	Wh-SR	Round	4.5
B6567-12	177	163	14	1.080	M	M	Wh	Round	3.5
B7768-4	170	150	20	1.090	S	S	Wh-SR	Round	3.5
Norchip North Dakota	166	146	20	1.089	S	S	Wh	Round	3.0
Frito Lay 282	161	145	16	1.093	M	M	Wh	R-flat	3.5
B7603-6	159	145	14	1.082	M	M	P-SR	Oval	3.0
B7650-9	156	133	23	1.088	M	M	P-SR	Round	3.0
B6987-43	148	136	12	1.088	M	M	Wh-SR	Round	3.5
Norchip Wisconsin	138	122	16	1.089	S	M	Wh	Round	3.0
B7595-3	127	107	20	1.081	M	M	Pink	R-flat	2.5
B7190-2	123	114	9	1.088	M	M	Wh	Round	3.0
B7669-2	113	91	22	1.073	S	S	Wh	Long	5.0
B7958-1	98	90	8	1.071	M	M	Pink	Round	3.0

Continued on next page

Table 1. Continued.

Variety	Marketable yield/acre Total	Size A[2]	Size B	Specific gravity	Eye depth[3]	Eye size[4]	Skin color	Eye appeal[6]
	Cwt.	Cwt.	Cwt.					
				Fairhope				
B7139-4	353	333	20	1.086				
Red La Soda - Wisconsin . .	324	310	14	1.062				
B6567-12.	318	300	18	1.073				
Red La Soda - North Dakota.	312	300	12	1.060				
B6987-56.	295	272	23	1.088				
Frito Lay 795	288	267	21	1.086				
Wischip (Wisconsin 623) . .	271	232	39	1.074				
Frito Lay 162	261	240	21	1.077				
Norchip North Dakota. . . .	260	233	27	1.077				
La Rouge - Wisconsin. . . .	255	237	18	1.062				
Wisconsin 729R.	255	232	23	1.073				
B7152-14.	249	225	24	1.059				
B7595-3	233	203	30	1.071				
Norchip Wisconsin	220	198	22	1.078				
La Chipper North Dakota . .	211	188	23	1.069				
La Chipper - Wisconsin. . .	210	182	28	1.068				
Frito Lay 282	206	191	13	1.086				
B7190-2	190	172	18	1.077				
Superior Wisconsin.	174	149	25	1.074				

1/ Crossville: Soil test p = 300 (VH); k = 90 (M); pH = 5.3.
Fairhope: Soil test p = 340 (VH); k = 220 (VH) pH = 5.2.
2/ Size A = potatoes with 1-7/8 inches diameter and larger. Size B = potatoes with 1-1/2 to 1-7/8 inches diameter.
3/ S - shallow; M - medium; D = deep.
4/ S = small; M = medium; L = large.
5/ Wh - shite; SR = some russet.
6/ 5 = excellent; 4 = good; 3 = poor; 2 = fair; 1 = very poor.

ALASKA

Curtis H. Dearborn

The 1975 growing season in Alaska was one of low light intensity, moderate temperature and adequate moisture. There were no insect or disease problems so pesticides were not used on the crop.

Potato variety trials were conducted in replicated plots to study 12 red-skinned varieties harvested 90 to 125 days after planting. Forty eight "whites" were dug 90 days after planting and evaluated for productivity, dry matter, skin character, and cullinary quality. Thirty "whites" were dug 125 days after planting and evaluated similarly. Twenty "russets" dug 125 days after planting were handled similarly. Seven hundred and thirty three clones representing 63 crosses of the B-series 8853-8978 were planted in single plots and evaluated. Alaska Frostless was tested for a third year on four densities of planting. A 40 percent increase in yield was obtained on the 18 inch row width over that of the 36 inch row width. Evidence gathered shows that significant yield increases can be obtained with Alaska Frostless on high density plantings. Level planting and no tillage thereafter gives Alaskan growers an advantage in cutting production costs not yet enjoyed elsewhere.

Red-skinned variety trials showed Alaska 5 to be the most desirable clone with 230 cwt/A of marketable 2" to 3-1/2" size after 90 days and 426 cwt/A after 125 days.

White-skinned trials harvested 90 days after planting showed Clone B-8221-6 to be the heaviest yielder, producing 325 cwt/A marketable with a specific gravity of 1.070. Clone B-7631-3 with 275 cwt/A and specific gravity of 1.073 was the most attractive of the "earlies". Alaska Clone 27-2 produced 274 cwt with a specific gravity of 1.082. Specific gravity for Kennebec and Green Mountain were 1.065 and 1.076, respectively.

White-skinned clones harvested 125 days after planting varied in yield from 370 cwt/A for Clone Ak. 37-2 to 173 cwt for Ak. 13-10. Specific gravities ranged from 1.082 to 1.106. The most attractive Clone Ak. 25-5 produced 355 cwt/A marketable with specific gravity of 1.102. Clone B-7631-3 produced 344 cwt at 1.088 and W-718 yielded 317 cwt at 1.079. Green Mountain produced 366 cwt at 1.096.

In the russet-skinned trial, Clone B-8227-16 yielded at the rate of 358 cwt per acre compared with Russet Burbank at 297 cwt. Their specific gravities were 1.085 and 1.090, respectively. Raritan with the same yield as Burbank showed a specific gravity of 1.095 but seemed to lack good eating qualities. Clone Ak. 37-5 russet yielded at the rate of 325 cwt with specific gravity of 1.102. Varieties Nampa, Nooksack and Targhee had specific gravities of 1.084 or less. Nampa yielded slightly more than Burbank.

Considerable emphasis was placed on differentiating clones in the raw stage organoleptically. Three clones have been identified each of which produces a different and unpleasant sensation in the mouth and nose. These sensations

are associated with seedlings containing germplasm from Clone B-5141-6. A glycoalkaloid content exceeding 20 milligrams per 100 grams fresh weight of potato can be present in a potato and still not have any unpleasant sensation in the mouth when the potato is eaten. Determinations should be made to learn what chemical or combination of chemicals is causing these unpleasant sensations and set new standards for quality. Surely the 20 milligram barometer for quality control will unnecessarily eliminate some new high quality, flavorful, potential new varieties if its use is applied across the board without specific knowledge of the real cause of unpleasant flavors.

Clone Ak. 5 which placed second among 21 clones in the NC Regional Trail of 1975 has been described for release as Alaska Red and is a prime example of the need for change in regulations. Under Alaskan growing conditions Clone Ak. 5 was found to have 24.4 milligrams of TGA per 100 grams fresh weight of tuber and under the same conditions and treatment Kennebec contained 53.9. No off-flavor or bitterness has been detected in either clone. Clone Ak. 5 grown in North Dakota courtesy of R. H. Johansen and analyzed by S. L. Sinden, Agricultural Research Service, Beltsville, Maryland, showed a TGA value of 17.9 milligrams per 100 grams of fresh tissue.

Evaluations made on the 773 clones of B-series 8853-8978 separated the clones into 111 "whites" representing 38 crosses and 61 "russets" representing 33 crosses.

Crosses from which selections were made in 1974 and a few of their characteristics are shown in the table together with the selections retained from the 1975 crop and their characteristics. All have been calculated from single plot measurements. No selections were kept from crosses B-8860, 8861, 8869, 8870, 8921, 8957, 8959 and 8975.

Good light colored chips were made from clones of crosses B-8872, 8877, 8878, 8887, 8891, 8898, 8901, 8904, 8907, 8910, 8971 and 8974.

Rogueing for "haywire" in 1974 apparently cleared the families of this trouble as none was observed in 1975.

Alaska Table. Averages for 3 characteristics of clones of B-Series 8853-8978 grown in an 8 or 20 hill plot in 1975.

Code	No. Clones	Family Total Cwt/A	%	Sp. Gr.[2/]	White Kept No.	White Kept Total Cwt/A	White Kept %	White Kept Sp. Gr.[2/]	Russet Kept No.	Russet Kept Total Cwt/A	Russet Kept %	Russet Kept Sp. Gr.[2/]
B-8853	10	313	66	94	-	---	--	--	4	353	75	92
B-8854	14	253	75	91	-	---	--	--	1	245	80	91
B-8855	9	321	67	90	1	287	82	93	-	---	--	--
B-8856	15	283	83	91	2	384	92	90	4	251	88	93
B-8857	7	303	80	91	-	---	--	--	2	347	84	92
[1/]B-8860	8	318	67	88	-	---	--	--	-	---	--	--
[1/]B-8861	9	336	70	88	-	---	--	--	-	---	--	--
B-8867	12	260	61	86	-	---	--	--	1	297	73	100
[1/]B-8869	13	259	48	93	-	---	--	--	-	---	--	--
[1/]B-8870	12	303	58	89	-	---	--	--	-	---	--	--
B-8872	14	370	70	90	6	417	74	92	-	---	--	--
B-8874	25	314	78	95	7	324	86	95	-	---	--	--
B-8877	16	360	83	86	4	461	74	82	-	---	--	--
B-8878	8	327	63	103	3	299	56	103	-	---	--	--
B-8879	21	389	76	83	2	520	83	80	-	---	--	--
B-8882	18	405	84	90	5	414	88	92	-	---	--	--
B-8883	19	367	81	90	3	384	88	95	1	318	68	85
B-8885	17	328	61	91	1	212	15	96	2	154	38	--
B-8886	5	424	77	83	-	---	--	--	1	344	90	89
B-8887	8	410	70	89	4	414	83	95	-	---	--	--
B-8891	17	372	74	86	6	405	84	91	1	427	86	88
B-8892	17	383	76	80	4	372	71	83	-	---	--	--
B-8893	21	403	76	79	2	382	70	90	1	428	90	97
B-8896	8	302	75	91	1	327	89	95	1	264	84	89
B-8898	18	347	70	95	3	424	79	93	-	---	--	--
B-8899	15	382	77	92	8	373	81	93	-	---	--	--
B-8901	17	339	69	91	4	423	80	89	2	362	70	96
B-8902	9	372	73	85	2	464	85	83	2	350	83	96
B-8904	9	354	75	91	3	338	76	93	-	---	--	--
B-8907	11	286	68	91	5	317	75	90	-	---	--	--
B-8908	7	287	75	86	-	---	--	--	1	275	76	96
B-8909	18	333	72	92	2	383	84	92	1	236	60	94
B-8910	8	323	60	96	3	349	69	100	-	---	--	--
B-8912	7	335	58	93	2	328	50	94	-	---	--	--
B-8915	2	448	74	91	1	449	80	92	-	---	--	--
B-8917	10	299	56	87	1	283	81	87	2	218	34	91

Alaska Table (continued)

Code	No. Clones	Family Total Cwt/A	%	Sp. Gr. 2/	White Kept No.	White Kept Total Cwt/A	White Kept %	White Kept Sp. Gr. 2/	Russet Kept No.	Russet Kept Total Cwt/A	Russet Kept %	Russet Kept Sp. Gr. 2/
B-8918	4	333	68	91	-	---	--	--	2	319	75	92
B-8919	11	403	75	86	2	614	90	76	3	367	71	92
B-8920	10	330	64	90	-	---	--	--	1	281	84	106
1/ B-8921	10	313	50	85	-	---	--	--	-	---	--	--
B-8922	12	439	72	80	1	530	77	79	3	457	93	75
B-8925	13	326	66	87	1	434	63	89	-	---	--	--
B-8926	18	388	74	87	1	449	78	84	3	333	69	88
B-8927	14	379	68	86	-	---	--	--	2	405	76	95
B-8928	11	402	75	84	-	---	--	--	2	402	88	87
B-8931	12	440	52	85	-	---	--	--	3	319	75	89
B-8932	10	460	73	85	1	590	57	83	1	332	84	92
B-8933	8	307	51	91	-	---	--	--	1	404	95	101
B-8934	5	456	73	85	-	---	--	--	1	443	80	88
B-8941	11	316	73	85	-	---	--	--	4	314	70	84
1/ B-8957	6	407	74	84	-	---	--	--	-	---	--	--
B-8958	12	375	66	91	3	405	70	96	-	---	--	--
1/ B-8959	13	331	70	85	-	---	--	--	-	---	--	--
B-8960	10	289	62	89	3	299	62	91	-	---	--	--
B-8961	8	305	70	81	1	418	82	86	-	---	--	--
B-8962	7	301	63	84	-	---	--	--	1	338	78	82
B-8964	7	306	75	94	3	362	83	95	-	---	--	--
B-8966	16	305	70	86	1	99	96	--	2	204	65	81
B-8969	6	304	70	95	-	---	--	--	1	269	48	96
B-8971	13	315	71	96	3	334	89	95	3	322	75	97
B-8974	13	350	76	93	6	390	79	96	-	---	--	--
1/ B-8975	12	350	70	67	-	---	--	--	-	---	--	--
B-8978	1	358	78	85	-	---	--	--	1	364	79	89

1/ Crosses yielding no desirable clones

2/ Specific gravity - precede two digit numbers in table with a 1.0 and three digit numbers with a 1. Determinations made on an 8 pound sample with potato hydrometer.

CALIFORNIA - 1975

R. E. VOSS & D. E. HALSETH

In 1975, an expanded potato variety selection, evaluation and development program was initiated. Second and third size tubers of first year seedlings were obtained from the breeding programs in North Dakota (R. Johansen), Idaho (J. Pavek), and Washington (W. Hoyman).

Approximately 30,000 tubers were planted in the Stockton Delta in late July and early August. Of 48 families from North Dakota, 114 were selected representing 42 families; of 144 families from Idaho, 178 selections were made from 82 families; and of 20 families from Washington, 133 selections were made from 20 families.

Approximately 150-200 seedlings were planted in observational plots at the USDA Cotton Research Station at Shafter in Kern County and at the University of California Tulelake Field Station. Replicated yield trials with 8-20 varieties each were conducted in 11 commercial fields and the 2 field stations.

New varieties and advanced selections that were grown on a limited commercial size scale in California in 1975 included WC285-146, WC285-18, WC285-83, A503-42, Nooksack, and ND6993-13.

New varieties and advanced selections that appear to have good promise in California, in addition to the above, include Bison, B6987-56, Targhee, WC285-141, WC316-1.

Advanced selections that have limited evaluation in California but appear to have good promise include the russets A68678-1, A66122-3, ND8913-4, and ND8914-5, the whites for chipping B6987-56, B6987-29, B7151-4, WN352-1, ND8888-2, ND8891-3, and ND7710-5, long whites A70362-1 and reds ND8458-4.

CALIFORNIA TABLE 1. YIELD AND QUALITY MEASUREMENTS AT SHAFTER, KERN COUNTY, 1975

Variety	Yield, cwt/A					%	Spec.	Vine	Tuber	Sugar	Mat-
	Total	No. 1's		<4 oz.	2's &	No. 1's	Grav.	Rating	Rating	Rating	urity
		>12 oz	4-12 oz		Culls		1.0--	1)	2)	3)	
				PART A.	RUSSETS						
A68678-1	535	0	425	85	20	79	88	3.0	3.1	0.7	M
Targhee	370	0	320	50	5	86	86	3.5	3.1	1.4	M
Russet Burbank	355	0	290	55	10	82	86	3.5	2.9	0.9	ML
WC314-2	345	40	265	25	15	88	92	3.0	3.4	1.3	M
A66122-3	345	20	265	30	25	83	83	--	3.0	1.2	EM
WC285-146	340	0	270	65	5	79	78	4.8	3.3	2.3	M
Nampa	340	0	265	60	15	78	86	3.0	3.1	1.1	M
WC325-1	330	5	270	30	20	83	88	3.2	2.8	1.0	M
ND7641-3	315	0	270	45	5	86	77	3.0	3.4	1.3	EM
A6371-2	315	0	175	120	15	55	84	3.8	3.2	2.0	L
ND6993-13	310	55	220	15	20	87	74	4.0	3.3	2.3	EM
Nooksack	310	0	275	25	10	89	90	3.3	3.4	1.0	M
Rus. Bur., X-Free	300	0	260	30	10	87	86	4.0	2.7	1.2	L
ND8914-5	295	0	220	75	5	75	78	4.2	3.2	3.1	E
WC285-18	285	35	230	20	0	93	78	3.0	3.2	1.2	M
ND8947-2	275	15	185	50	30	73	67	3.2	2.8	2.3	M
Norgold Russet	270	5	215	40	10	82	78	4.2	3.2	3.0	EM
ND8913-4	265	0	145	105	20	55	78	4.5	3.8	1.8	M
WN330-1	260	0	200	50	10	77	67				
WC285-141	260	5	190	60	5	75	82	3.8	3.1	1.2	M
WC316-1	250	0	225	15	10	90	73	3.0	3.3	1.5	ML
ND9358-3	250	5	175	65	10	72	70	2.8	3.7	1.6	M
WN541-2	245	0	190	50	5	78	78	4.0	3.5	1.2	M
ND9193-2	240	0	160	60	20	67	67	3.2	3.4	2.2	EM

CALIFORNIA TABLE 1. YIELD AND QUALITY MEASUREMENTS AT SHAFTER, KERN COUNTY, 1975

Variety	Yield, cwt/A					%	Spec.	Vine	Tuber	Sugar	Mat-
	Total	No. 1's		<4 oz.	2's &	No. 1's	Grav.	Rating	Rating	Rating	urity
		>12 oz	4-12 oz		Culls		1.0--	1)	2)	3)	
PART B. WHITES											
ND8891-3	555	35	445	40	35	86	77	5.0	3.8	0.7	E
ND8888-1	450	15	370	45	15	86	75	3.5	3.6	1.3	EM
A503-42	435	35	370	15	15	93	89	3.8	3.4	0.8	EM
Kennebec	430	40	320	25	40	84	80	4.2	3.2	1.8	EM
WN352-1	420	10	390	15	10	95	86	4.8	4.0	--	M
B6987-56	410	45	330	20	10	91	93	6.0	3.5	0.5	E
White Rose	405	50	280	40	30	82	76	4.8	3.1	1.2	EM
BR6316-5	365	0	300	40	20	82	79	3.0	3.5	0.8	M
ND7710-5	365	10	305	20	25	86	75	4.0	3.0	0.7	M
B7151-4	355	0	305	35	15	86	92	3.0	3.0	1.3	E
ND7878-1	325	20	240	20	45	80	77	3.0	3.2	1.5	E
ND8750-20	315	10	280	20	10	92	76	3.5	3.3	1.0	E
ND8888-2	310	5	255	30	25	84	74	5.0	3.5	0.8	E
ND8742-2	310	10	245	30	20	82	72	3.0	3.3	0.7	EM
ND8297-1	300	0	235	50	20	78	72	4.5	3.5	0.8	E
ND9337-4	290	5	230	50	10	81	76	4.2	2.7	1.7	EM
ND9086-1	290	0	230	35	30	79	76	3.2	3.0	0.8	M
B6987-29	255	45	180	10	15	88	89	4.0	2.8	0.7	E
ND8850-2	240	0	130	90	20	54	76	4.0	2.6	0.8	ML
ND8751-16	210	0	135	70	12	64	78	3.2	2.6	0.7	M
ND9124-4	205	0	160	40	5	78	80	2.0	2.5	1.0	M
PART C. REDS											
Red LaSoda	490	15	415	25	30	88	80	4.2	3.4	1.2	E
Chieftain	445	10	390	40	5	90	80	3.5	3.8	1.2	EM
ND8458-4	420	0	400	15	5	95	78	5.0	3.5	0.7	EM
Bison	330	10	280	40	0	88	73	4.0	3.6	0.8	E

1/ Vine Ratings: 6=Excellent, 5-Very Good, 4-Good, 3=O.K., 2=Fair, 1=Poor
2/ Tuber Ratings: 5=Outstanding, 4=Good, 3=Questionable, 2=Unacceptable, 1=Poor
3/ Sugar Rating: 0=None, 1=Approx. 1/10%, 2=Approx. 1/4%, 3=Approx. 1/2%, 4=2% or more
In most California locations, A rating of approx. 1.25 corresponds to 6 on NPCI color chart for chips

CALIFORNIA TABLE 2. YIELD AND QUALITY MEASUREMENTS AT TULELAKE 1975

Variety	Yield, cwt/A					%	Spec.	Vine	Tuber	Sugar	Mat-
	Total	No. 1's		<4 oz.	2's &	No. 1's	Grav.	Rating	Rating	Rating	urity
		>12 oz	4-12 oz		Culls		1.0--	1)	2)	3)	
					PART A. RUSSETS						
A66122-3	700	170	325	65	145	71	78	4.9	3.0	0.8	ML
Nampa	610	90	295	80	145	65	85	4.8	3.3	1.2	M
A68678-1	590	220	305	25	40	89	88	5.5	2.0	1.0	EM
ND6993-13	575	325	175	10	65	87	68	3.5	4.0	1.8	E
A6371-2	570	100	340	55	80	77	82	5.8	2.0	2.4	M
A66107-51	565	190	230	20	125	75	74	4.9	4.0	2.3	EM
Norgold Russet	550	135	370	35	5	92	80	4.9	4.0	1.3	EM
Russet Burbank	530	60	280	80	110	64	88	5.0	3.0	1.2	ML
WC285-146	450	45	285	30	85	74	72	4.2	3.0	1.3	M
ND7641-3	445	185	235	10	15	95	74	3.2	2.0	0.6	M
Targhee	410	70	200	30	115	66	78	3.8	3.0	1.6	M
ND9193-2	400	85	225	40	50	77	72	3.0	4.0	1.0	EM
ND8913-4	390	20	245	115	10	68	81	3.5	2.0	1.8	EM
ND8947-2	355	140	135	55	25	78	70	3.0	4.0	1.3	EM
WC325-1	350	115	155	20	60	78	88	3.0	4.0	1.5	EM
WC314-2	340	80	185	15	60	78	89	3.0	2.5	1.0	ML
WC316-1	325	115	150	20	35	83	74	2.2	4.0	1.2	M
WC285-141	315	75	180	30	30	82	84	3.0	4.0	2.0	EM
Nooksack	310	95	170	15	35	85	79	2.5	2.0	1.4	M
ND9358-3	255	25	120	35	70	59	--	2.2	2.0	0.9	EM
ND8914-5	225	20	145	55	5	74	--	3.2	4.0	1.6	EM
WC285-18	220	45	60	25	95	46	--	2.5	2.5	2.0	M
WN541-2	205	60	110	10	30	81	72	2.0	2.5	2.1	M

CALIFORNIA TABLE 2. YIELD AND QUALITY MEASUREMENTS AT TULELAKE 1975

Variety	Yield, cwt/A Total	No. 1's >12 oz	No. 1's 4-12 oz	<4 oz.	2's & Culls	% No. 1's	Spec. Grav. 1.0--	Vine Rating 1)	Tuber Rating 2)	Sugar Rating 3)	Maturity
PART B. WHITES											
A503-42	725	210	420	20	80	86	86	4.8	3.5	1.5	M
ND8891-3	670	260	310	35	65	85	79	5.0	4.0	2.4	E
B6987-29	665	65	545	20	35	92	92	4.0	3.0	1.2	M
ND8888-1	625	160	315	45	110	76	69	4.4	3.0	1.0	E
White Rose	600	270	75	25	230	57	73	5.2	4.0	1.8	EM
ND8750-20	540	140	325	30	45	86	77	3.8	4.0	0.7	M
B7151-4	510	15	430	20	45	87	92	5.5	3.0	1.2	M
Kennebec	505	225	125	5	150	69	76	5.0	2.7	1.6	EM
WN352-1	500	250	220	10	15	95	96	4.8	4.0	1.0	M
ND8888-2	480	170	230	30	50	83	75	3.2	4.0	1.0	E
ND7878-1	425	40	320	45	20	85	68	4.0	4.0	1.2	E
ND8850-2	420	5	315	55	50	76	78	3.2	4.0	0.8	E
ND7710-5	415	135	260	15	15	94	76	3.5	4.0	1.1	E
B6987-56	400	50	325	15	10	94	93	5.0	3.0	0.8	E
ND8751-16	400	0	295	100	5	74	74	3.2	3.0	0.9	E
ND9124-4	350	50	265	30	5	90	82	3.5	4.0	0.7	E
ND8742-2	345	55	270	15	5	95	79	3.0	4.0	0.7	E
ND8297-1	335	0	270	55	10	80	66	3.0	3.0	0.6	E
ND9337-4	270	40	170	45	10	78	73	4.7	2.0	1.2	M
ND9086-1	160	0	120	35	5	76	--	1.8	3.0	0.8	E
PART C. REDS											
Chieftain	515	115	380	15	10	95	73	4.4	3.0	1.4	EM
Bison	485	80	390	15	5	96	75	4.0	3.5	1.2	E

1/ Vine Ratings: 6=Excellent, 5=Very Good, 4=Good, 3=O.K., 2=Fair, 1=Poor
2/ Tuber Ratings: 5=Outstanding, 4=Good, 3=Questionable, 2=Unacceptable, 1=Poor
3/ Sugar Rating: 0=None, 1=Approx.1/10%, 2=Approx. 1/4%, 3=Approx. 1/2%, 4=2% or more
In most California locations, A rating of approx. 1.25 corresponds to 6 on NPCI color chart for chips

CALIFORNIA TABLE 3. OBSERVATIONAL CLONES SELECTED FOR FURTHER EVALUATION

Clone	Location Selected		Clone	Location Selected		Clone	Location Selected	
	Kern Co.	Tulelake		Kern Co.	Tulelake		Kern Co.	Tulelake
			PART A. RUSSETS					
A6379-1		X	A70365-17	X		NDA 8694-3	X	
A6595-3	X		A70365-21	X	X	NDA 9145-1		X
A6680-5		X	A70365-27	X		ND9642-3	X	
A66107-12		X	A70365-28	X		ND9157-10	X	
A66110-7	X		A70370-3	X		ND9189-6	X	
A66126-17	X	X	A70382-9		X	NDA 9249-3	X	
A67370-1	X		A70383-12		X	ND9434-1	X	X
A67487-3		X	A70383-24	X		ND9460-1	X	
A68709-2		X	A70383-26		X	ND9460-2	X	
A69173-2		X	A70409-3	X		ND9463-2	X	
A69823-2	X		A70416-5		X	ND9464-3	X	
A69827-10	X		A70906-1	X		ND9507-3	X	
A69870-10		X	A71579-1	X		ND9551-4	X	
A70245-2	X		C6-5		X	ND9570-5	X	
A70365-5	X		C44-13	X		WN328-2	X	X
A70365-6	X		NDA7697-2	X		WN330-1	X	X
A70365-15	X		NDA8451-3		X	WC285-83	X	
A70365-16		X						
			PART B. WHITES					
A6789-7	X		A70270-3	X		ND9450-8	X	
A67142-1	X		A70362-1	X	X	ND9474-6	X	X
A67401-1	X		A70369-2	X		ND9524-5	X	X
A67456-7	X		A70449-3	X		ND9558-1	X	
A6948-4	X		A71608-4		X	ND9558-2	X	X
A69823-2		X	ND9333-2	X		ND9620-1	X	
A69850-4		X	ND9420-10	X	X			
A69868-2		X	ND9420-11	X				

COLORADO

J. A. Twomey and M. Workman

Potato Seedling and Varietal Evaluation

Seedling Program. From approximately 20,000 first-year seedlings grown in 1975, 405 were selected for further testing. These included both chipping and fresh market types; however, primary emphasis was placed on selecting long russets. Fifty-three second-year seedlings were selected for further testing.

Preliminary chip color tests were made on 27 second-year seedlings at harvest and results may be found in Colorado Table 1. More extensive tests were conducted on third-year selections and results may be found in Colorado Table 2.

Yield Trials. At the San Luis Valley Research Center, eight advanced seedlings and Russet Burbank were planted in Fall-plowed alfalfa ground on May 9. Each plot was two rows 30 feet long and was replicated four times. Fertilizer (18-46-0) was applied at planting at the rate of 350 lbs/A. Row spacing was 34 inches with seedpieces spaced 12 inches in the row.

Seed was cut in December to determine the effect of early cutting on stands. Line WC 230-14 was particularly susceptible to decay and had to be discarded and a new lot of seed was cut in March. Lines BC 7694-1, WC 316-1, WC 285-18, Nooksack and Russet Burbank were not affected greatly by early cutting.

A damaging frost on June 26 delayed development of the crop and undoubtedly affected yields. Harvest was on September 17. The yield, grade and stand data may be found in Colorado Table 3.

Mr. Charles Urano, Weld County vegetable specialist, conducted a yield trial at Gilcrest, Colorado. These results may be found in Colorado Table 4.

Colorado Table 1. Chip Color of Second-Year Seedlings at Harvest.

Seedling No.	Color[1/]	Seedling No.	Color[1/]	Seedling No.	Color[1/]
WC 699-1	38.0	WC 661-4	37.0	WC 612-6	45.5
WC 686-3	43.0	WC 661-5	45.0	WC 612-13	37.0
WC 678-1	42.5	WC 661-12	28.5	WC 612-14	27.5
WC 678-5	33.5	WC 661-13	39.0	BC 8883-3	38.0
WC 678-18	24.0	WC 661-17	48.0	BC 8881-4	30.5
WC 678-27	40.0	WC 657-5	34.0	BC 8843-4	40.0
WC 672-2	45.0	WC 626-7	46.5	BC 8833-5	38.0
WC 672-9	44.5	WC 626-8	45.0	BC 8812-5	24.0

[1/] Chip color determined with Photovolt reflectance meter.

Colorado Table 2. Chip Color of Third-Year Seedlings at Harvest and After Storage.

Seedling No.	At Harvest	3 Wks. 70° Post Harvest	12 Wks. Storage @ 40° From 40°	12 Wks. Storage @ 40° Warmed 2 Wks. @ 70°	Specific Gravity[2/]
	Color[1/]	Color[1/]	Color[1/]	Color[1/]	
WC 521-12	33.0	39.5	10.0	38.0	1.130
WC 542-2	38.5	35.0	14.0	28.5	1.104
WC 542-8	31.0	36.0	12.0	35.5	1.130
BC 8467-2	32.0	32.0	11.5	27.0	1.104
Snowchip	43.0	33.5	13.0	40.0	1.102

[1/] Chip color determined with Photovolt reflectance meter. Color readings of 25 or above are acceptable.

[2/] Specific gravity determined by potato hydrometer.

Colorado Table 3. Yield, Grade and Percent Stand for 1975 Variety Trial at San Luis Valley Research Center.

Selection	Yield Per Acre: U. S. No. 1 4-10 oz.	U. S. No. 1 >10 oz.	U. S. No. 2	Culls	B size <4 oz.	Total	Total U. S. No. 1	U. S. No. 1	Stand
	Cwt.		Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	%	%
BC 7679-4	227	42	12	5	67	353	269	76	95
WC 316-1	176	46	21	4	44	290	222	76	90
WC 314-2	143	25	29	11	55	263	169	64	69
WC 285-18	203	46	18	5	85	358	249	70	100
WC 285-146	164	19	14	4	70	271	184	68	83
Nooksack	174	65	28	3	30	299	238	80	99
WC 304-4	122	59	29	6	36	252	181	71	57
R. Burbank	185	18	28	4	99	334	203	61	94
WC 230-14	175	44	9	2	58	287	219	76	86
L.S.D. (.05)	32	20	14	5	13	28	33	8	10

Colorado Table 4. Yield, Grade and Specific Gravity of Potato Trial at Gilcrest, Colorado.

Selection	% Stand	Total Cwt/A	U. S. No. 1 Cwt/A	U. S. No. 2 Cwt/A	Specific Gravity
WC 285-18	84	259	219	8	1.073
WC 304-4	84	394	353	23	1.069
WC 316-1	81	329	293	19	1.078
WC 314-2	80	399	275	30	1.082
BC 7679-4	83	363	317	32	1.073
WC 285-146	74	250	216	7	1.083
Nooksack	83	263	246	7	1.083
Norgold	85	372	322	23	1.073

FLORIDA

J. R. Shumaker, D. P. Weingartner, James Watts, and Raymon E. Webb

Variety and Seedling Trials

Methods. Potato varieties and seedlings were tested for adaptability, desirable horticultural characteristics, and resistance to tuber symptoms of corky ringspot (CRS) and brown rot (Pseudomonas solanacerarum) diseases at the Agricultural Research Center (ARC), Hastings, Florida. Clones were grown in either advanced (four replications), intermediate (three replications) or observational (one replication) trials. Depending on the nature of the test (Procedures, Florida Tables 1, 2, and 3) soil fumigation was applied as follows. In-the-row applications of preplant Telone (8 gpa) or preplant Telone plus broadcasted, sprayed Furadan 4F applied just after planting and incorporated in-the-row at the rate of 4 lb. ai/A. Yield and tuber appearance and disease ratings were taken at harvest. Tuber samples were shipped to Berwick, Pennsylvania, for specific gravity and chip evaluation.

Weather Conditions. Freezing temperatures on March 4 caused some plant injury. Yields of late plantings were reduced following root injury and subsequent plant decline associated with over 2 inches of rain which fell on April 14 and 15.

Advanced Yield and Quality Tests (Tables 1 and 2). Several clones produced yields of high quality tubers equal to or greater than those of the standard cultivar Sebago. Low yields of some cultivars (e.g. Superior) were due to poor recovery following the March freeze and April rain.

Intermediate Corky Ringspot (CRS) and Disease Resistance Evaluations (Table 3). Incidence and severity of CRS (caused by tobacco rattle virus) and tuber brown rot (P. solanacerarum) diseases were low to moderate. Seedlings reacting positively to CRS disease will not be included in 1976 tests.

Summary of Tests Comparing USDA Seedling B6987-56 with Sebago (Tables 4 and 5). During the past four years (1972-75), seedling B6987-56 has been the outstanding entry in tests conducted at this ARC and has shown promise of being both a superior chip and table stock cultivar. In 1975 the seedlings were tested by three diversified local growers. In these tests the mean yield produced by B6987-56 was 50 CWT/acre greater than that produced by Sebago.

Florida Table 1. Results from 22 clones selected for advance yield and quality testing at Hastings, Florida -- 1975.

Clone	Yield		Ratings[1]			
	Size"A"	Total	Tuber appearance	Tuber brightness	Chip color[2]	Specific gravity
	cwt/acre					
B6987-56	198a	211a	7.0b	5.0g	1.6	1.0714
B7629-1	193ab	202a	6.5b-d	6.3b-f	2.0	1.0557
B6987-29	192a-c	201a-b	5.0e	7.0bc	1.4	1.0620
Sebago	187a-d	200a-b	6.5b-d	7.0bc	2.6	1.0558
Chiefton	171b-e	189bc	5.8b-e	5.8d-g	2.2	1.0547
B7200-26	165b-f	181b-d	6.8bc	7.5a	1.2	1.0656
Hudson	164b-f	175b-d	5.3de	6.0c-g	2.6	1.0568
B7164-25	160b-f	172b-d	5.8b-e	5.0g	2.5	1.0599
Norchip	155b-g	165b-e	5.3de	6.8b-d	1.8	1.0658
Pungo	149b-h	157b-f	4.8e	5.0g	3.0	1.0566
BR7051-3	148c-h	159b-f	7.0b	6.5b-f	1.0	1.0732
Wauseon	146d-i	164b-e	5.3de	5.5e-g	2.8	1.0557
Penn 71	137e-i	146c-h	4.8e	6.8b-d	1.6	1.0567
LaChipper	135e-i	151c-g	5.5c-e	7.0bc	1.4	1.0602
LaRouge	121f-j	133d-h	4.8e	6.5b-e	5.0	1.0569
B7608-2	114g-j	134d-h	6.5b-d	1.8h	2.4	1.0479
Red LaSoda	114g-j	123e-h	5.8b-e	7.0bc	5.0	1.0525
B6969-2	108h-j	124e-h	7.5a	7.3b	2.4	1.0601
B8019-7	105h-j	117e-h	7.5a	7.3b	1.6	1.0601
Superior	103ij	115f-h	7.3b	5.5e-g	2.6	1.0590
Bakeking	83jk	107gh	7.0b	5.3fg	2.8	1.0699
Wischip	59k	101h	6.5b-d	5.3fg	1.6	1.0567

1/ From 9.0 = most desirable to 0.0 = completely undesirable.
2/ Chip color 1-4 = acceptable; 5 = borderline; 6-9 = too dark for use. Mean of 5 determinations.

PROCEDURES: Soil fumigation = 8gpa preplant Telone + 4 lb. ai/A Furadan in-the-row at planting. Replications = 4. Plots = 20 hill units (20 ft.). Planted = 2/4/75. Harvested = 5/20/75.

Florida Table 2. Results from 19 seedlings and 3 standard varieties selected for advance yield and quality testing at Hastings, Florida -- 1975.

Clone	Yield		Ratings[1]			
	Size"A"	Total	Tuber appearance	Tuber brightness	Chip color[2]	Specific gravity
	cwt/acre					
B7009-4	367a	373a	5.8bc	7.0b	6.2	1.0548
B7595-7	330b	351a	6.0bc	6.0b-f	4.8	1.0599
B7866-3	326b	332bc	6.8bc	6.8bc	-	-
B7871-3	324bc	338b	4.3de	5.0e-g	4.8	1.0512
Sebago	289b-d	297b-d	6.0bc	6.3b-e	4.8	1.0492
B7151-4	273c-e	285c-e	6.3bc	4.8fg	3.2	1.0591
B8101-3	266de	283c-e	6.3bc	5.3d-g	5.2	1.0568
B5141-6	264de	275de	5.5b-d	5.8b-f	-	-
Pungo	264de	270de	4.3de	5.5c-g	3.8	1.0599
B6955-35	256de	269de	6.3bc	6.3b-e	3.8	1.0620
B6987-56	252de	261d-f	6.8bc	5.0e-g	2.0	1.0664
B6503-2	249d-f	255d-g	6.3bc	6.8bc	1.6	1.0658
B7610-1	248d-f	259d-f	4.0e	4.0g	1.6	1.0611
B7516-7	244d-f	251d-g	7.0a	6.0b-f	3.6	1.0613
B7802-2	236d-f	245d-g	5.8bc	7.5a	4.2	1.0635
B6986-2	230ef	237e-h	6.8bc	6.5b-d	2.2	1.0591
B7914-2	230ef	240d-h	6.3bc	6.3b-e	3.0	1.0647
B7957-5	217ef	241d-h	5.5b-d	5.3d-g	2.4	1.0636
B7744-4	195fg	200g-i	7.0a	5.0e-g	-	-
B8154-9	177g	207f-i	5.5cd	5.0e-g	2.8	1.0645
B7825-5	164g	188hi	6.3bc	6.3b-e	3.0	1.0523
Superior	161g	173i	6.5bc	4.0g	3.4	1.0647

1/ From 9.0 = most desirable to 0.0 = completely undesirable.
2/ Chip color 1-4 = acceptable; 5 = borderline; 6-9 = too dark for use. Mean of 5 determinations.

PROCEDURES: Soil fumigation = 8gpa preplant Telone + 4 lb. ai/A Furadan in-the-row at planting. Replications = 4. Plots = 20 hill units (20 ft.). Planted = 2/10/75. Harvested = 5/21/75.

Florida Table 3. Results of 185 seedlings and standard varieties selected for intermediate corky ringspot (CRS) disease testings at Hastings, Florida -- 1975.

Clone	Yield		Ratings[1/]		
	Size A	Total	Tuber appear-ance	Tuber exter-nal(CRS)	Tuber brown rot
Mean of 3 Plots	cwt/acre				
ACC 26619-13	136	155	6.3	8.3	8.0
B 5141-6	108	110	7.3	9.0	6.6
B 6503-2	89	92	7.0	8.6	8.0
B 6930-6	75	92	7.3	8.6	6.6
B 6951-1	161	176	6.6	9.0	7.3
B 6951-5	98	103	6.3	8.6	8.0
B 6955-33	30	150	6.3	8.0	8.3
B 6955-35	138	149	4.3	8.6	6.3
B 6969-2	115	125	7.0	9.0	6.3
B 6986-2	135	138	6.3	8.6	7.3
B 6987-29	221	229	7.0	9.0	8.3
B 6987-43	141	144	6.3	9.0	7.3
B 7009-4	232	238	6.3	8.0	7.0
B 7138-11	82	94	7.0	8.6	6.3
B 7139-4	238	244	7.0	9.0	8.3
B 7141-1	95	103	6.6	8.6	6.6
B 7147-8	89	109	8.0	9.0	8.3
B 7148-4	93	95	6.6	8.6	8.0
B 7151-4	191	203	6.0	9.0	6.6
B 7152-1	138	147	7.3	9.0	6.3
B 7152-12	130	147	8.0	9.0	8.0
B 7152-3	92	113	6.3	9.0	8.0
B 7153-29	125	140	7.0	9.0	7.6
B 7160-4	173	196	7.0	9.0	8.6
B 7164-25	136	143	6.3	9.0	5.6
B 7167-2	135	141	7.3	9.0	7.6
B 7167-30	143	145	6.3	8.6	8.6
B 7188-56	178	202	7.3	9.0	8.6
B 7200-26	221	231	7.6	9.0	8.6
B 7252-3	146	153	6.3	9.0	7.3
B 6584-12	271	272	5.3	8.6	7.6
B 7592-1	182	194	7.0	8.6	9.0
B 7595-3 Red	189	200	5.3	9.0	8.3
B 7603-1 Red	84	118	6.0	9.0	9.0
B 7603-6 Red	201	214	6.6	8.6	8.0
B 7610-1	231	241	6.3	9.0	8.6
B 7618-6	205	215	7.3	9.0	8.6
B 8393-6	198	279	6.2	9.0	7.2
B 7620-7	178	191	7.3	9.0	8.0
B 7621-1	214	220	5.6	9.0	8.0
B 7621-2	161	164	5.6	8.0	6.6
B 7621-9	220	225	5.6	9.0	7.6
B 7629-1	209	215	7.2	9.0	7.2
B 7631-8	98	111	7.0	8.6	9.0

Florida Table 3. (Continued)

Clone	Yield		Ratings[1/]		
	Size A	Total	Tuber appearance	Tuber external(CRS)	Tuber brown rot
	cwt/acre				
B 7636-15	86	100	8.0	9.0	8.2
B 7650-9 Red	207	217	6.3	9.0	8.3
B 7650-19 Red	188	196	7.0	8.3	9.0
B 7680-3	134	148	7.3	9.0	9.0
B 7680-11	143	170	7.0	9.0	7.6
B 7744-4	146	147	6.6	9.0	7.6
B 7744-5 Red	212	218	5.6	7.6	8.3
B 7744-6 Red	273	281	6.0	8.6	8.6
B 7767-2	113	116	7.3	9.0	8.0
B 7783-8	81	88	7.3	9.0	6.6
B 7802-2	132	137	8.0	9.0	8.6
B 7825-5	105	125	6.6	7.3	8.3
B 7828-9	161	184	6.0	9.0	7.6
B 7828-18	136	138	5.6	6.6	6.0
B 7832-2	120	127	6.3	9.0	8.0
B 7839-7 Red	186	201	7.0	8.6	8.6
B 7840-2	157	165	7.0	8.6	8.3
B 7845-4	184	218	6.3	9.0	9.0
B 7845-6	87	106	6.3	9.0	8.6
B 7845-10	114	145	7.3	8.6	8.6
B 7845-14	162	177	7.0	9.0	8.6
B 7845-17	150	170	7.0	9.0	8.3
B 7845-19	111	133	6.6	9.0	7.6
B 7845-21	94	114	7.3	9.0	7.3
B 7845-23	126	134	6.6	9.0	8.6
B 7845-29	99	122	7.6	9.0	8.3
B 7845-26	171	182	7.0	9.0	8.0
B 7848-19	183	184	6.6	9.0	8.3
B 7848-23	178	185	7.0	9.0	8.6
B 7858-6	121	132	5.6	9.0	6.6
B 7859-2	246	257	6.0	9.0	7.5
B 7863-1	174	179	6.6	9.0	7.3
B 7863-5	201	207	6.0	9.0	9.0
B 7863-6	188	189	6.0	8.3	7.6
B 7865-12	165	180	7.0	9.0	8.3
B 7871-3	206	216	4.6	9.0	8.3
B 7871-5	189	196	5.5	2.0	6.5
B 7888-7	170	188	4.5	9.0	7.5
B 7888-8	127	138	5.6	9.0	7.0
B 7888-9	194	208	6.3	8.6	8.6
B 7891-3	150	160	5.6	9.0	7.6
B 7897-1	190	206	7.0	9.0	8.0
B 7897-3	172	184	5.3	8.6	8.0
B 7902-8	137	142	5.3	9.0	7.6
B 7902-9	89	93	5.3	9.0	7.0
B 7903-1	139	158	6.0	9.0	7.0
B 7914-2	135	144	6.6	8.6	7.6
B 7929-3	131	160	6.0	9.0	7.3
B 7929-11	117	140	6.3	8.6	8.3

Florida Table 3. (Continued)

Clone	Yield		Ratings[1/]		
	Size A	Total	Tuber appearance	Tuber external(CRS)	Tuber brown rot
	cwt/acre				
B 7930-2	193	214	5.6	9.0	9.0
B 7939-4	155	160	5.3	8.3	8.0
B 7957-5	96	109	6.0	9.0	5.0
B 8004-8	186	194	5.6	8.6	6.3
B 8019-7	156	164	6.3	9.0	5.6
B 8036-1	146	155	6.6	9.0	8.0
B 8073-3	150	158	6.6	9.0	6.3
B 8086-3	154	166	7.0	8.6	7.6
B 8088-2	127	147	6.6	9.0	8.6
B 8091-8	122	136	5.0	9.0	6.3
B 8101-3	166	182	6.6	9.0	7.6
B 8123-3	101	120	6.3	8.6	7.3
B 8123-11	214	222	6.6	9.0	7.6
B 8154-9	90	128	6.0	8.6	9.0
B 8178-1	146	158	7.0	8.0	8.0
B 8178-4	111	132	7.3	9.0	8.3
B 8178-5	120	148	6.3	9.0	8.6
B 8181-1	82	145	5.0	8.6	8.3
B 8181-3	88	117	7.0	9.0	8.3
B 8185-6	184	200	5.3	9.0	6.3
B 8185-11	147	168	6.6	9.0	7.0
B 8188-1	101	124	6.3	9.0	7.3
B 8212-1 Red	151	181	7.3	9.0	8.3
B 8212-2 Red	101	128	6.3	9.0	8.0
B 8247-1	112	143	7.0	9.0	8.0
B 8261-3	129	142	6.6	9.0	7.3
B 8280-5	144	159	7.0	8.6	9.0
B 8280-8	166	196	6.6	9.0	9.0
B 8281-4	80	101	6.3	9.0	7.6
B 8285-3	81	109	6.6	9.0	8.3
B 8288-6	223	231	6.0	9.0	9.0
B 8290-5	98	125	7.0	9.0	8.6
B 8310-13	61	107	8.0	9.0	9.0
B 8314-5	216	227	7.3	9.0	8.6
B 8318-4	120	164	6.6	9.0	8.6
B 8331-4	139	148	7.0	9.0	8.6
B 8332-2	87	134	6.6	9.0	8.3
B 8336-3	95	115	7.0	9.0	8.3
B 8338-7	163	176	7.0	8.3	8.3
B 8339-1	110	121	6.6	8.6	9.0
B 8356-1	100	109	5.0	9.0	6.5
B 8377-2	100	121	7.0	8.6	8.0
B 8392-5	126	127	6.6	8.3	7.6
B 8392-7	186	190	5.3	6.0	6.3
B 8393-5	99	126	6.0	9.0	7.6
B 8393-6	229	252	5.0	7.0	7.0
B 8393-7	104	113	7.0	9.0	7.5
B 8393-8	65	88	6.6	8.0	6.6
Anoka	134	135	5.3	7.6	8.3

Clone	Yield		Ratings[1/]		
	Size A	Total	Tuber appearance	Tuber external(CRS)	Tuber brown rot
	cwt/acre				
Chieftain Red	249	261	5.6	9.0	7.6
Cobbler	132	147	6.0	9.0	7.0
Green Mountain	139	155	6.6	9.0	8.6
LaChipper	199	203	7.0	8.0	7.0
LaRouge Red	129	135	6.0	8.0	6.6
Merrimack	181	187	5.6	9.0	6.6
Norchip	149	158	7.6	8.3	8.3
Red LaSoda Red	116	120	6.0	9.0	5.3
Superior	110	118	7.6	9.0	7.0
B 7629-1	143	149	5.5	9.0	7.5
B 6987-56	236	248	7.0	9.0	9.0
B 7608-2	157	177	5.6	9.0	8.6
Sioux Red	238	244	6.3	8.6	8.6
Wischip	75	118	7.0	9.0	8.0
B 6987-29	206	216	6.6	9.0	7.3
Penn 71	172	177	6.6	9.0	8.3
Observational Plot					
B 7186-4	93	98	5.0	9.0	6.0
B 7186-8	193	204	5.0	9.0	6.0
B 7186-10	190	200	6.0	9.0	8.0
B 7186-11	187	200	7.0	8.0	8.0
B 7186-13	140	160	6.0	9.0	7.0
B 7186-16	136	151	7.0	9.0	9.0
B 7186-19	123	131	5.0	9.0	6.0
B 7186-20	223	224	6.0	9.0	9.0
B 7186-21	111	119	4.0	9.0	9.0
B 7186-23	166	171	4.0	7.0	6.0
B 7186-25	85	89	6.0	9.0	5.0
B 7186-26	132	139	6.0	8.0	5.0
B 7186-31	164	170	5.0	9.0	8.0
B 7186-33	142	166	6.0	9.0	8.0
B 7186-38	144	159	4.0	9.0	8.0
B 7186-39	100	111	6.0	6.0	9.0
B 7186-41	140	143	4.0	9.0	5.0
B 7186-42	235	239	7.0	9.0	9.0
B 8417-1	163	191	7.0	9.0	6.0
B 8417-4	225	230	5.0	9.0	8.0
B 8417-10	56	99	5.0	9.0	9.0
B 8418-12	178	188	7.0	9.0	8.0
B 8418-14	131	134	6.0	9.0	7.0
Mean of 4 plots					
Sebago	184	195	6.0	8.6	6.6
Pungo	181	185	6.7	9.0	8.2
Hudson	217	227	5.7	9.0	8.0
Wauseon	187	202	7.6	9.0	8.3

1/ From 9.0 = most desirable or none to 0.0 = undesirable or most severe (100%).

PROCEDURES: Soil fumigation in-the-row = 8gpa of Telone. Plots = 13 hill units (13 ft.). Planted = 2/5/75. Harvested = 5/22/75.

Florida Table 4. Summary of performance tests conducted over 4 years comparing USDA seedling B6987-56 with Sebago at the Agricultural Research Center, Hastings, Florida.

Year	No. times comparable plots replicated[1/]	B6987-56 Yield Size 'A'	B6987-56 Specific gravity	Sebago Yield Size 'A'	Sebago Specific gravity
		cwt/acre		cwt/acre	
1972	5	187	1.0630	114	1.0520
1973	6	246	1.0788	151	1.0640
1974	10	246	1.0880	154	1.0656
1975	23	229	1.0830	207	1.0660
4-Year Mean		227	1.0782	158	1.0619

1/ Replications of single row plots varied in length from 13 to 20 feet.

Florida Table 5. Summary of grower yield performance tests comparing USDA seedling B6987-56 with Sebago at Hastings, Florida -- 1975.

Grower, location, planting-harvest dates	Clone	Yield US1A	Yield US1B	Yield Total
Charles Proctor,	B6987-56	233	7	240
Federal Point[1/],	Sebago	179	5	184
Jan. 7 - Apr. 15	+ or - Sebago's yield	+54	+2	+56
Wetumpka Fruit Co.,	B6987-56	304	16	320
Hastings[2/],	Sebago	274	26	300
Jan. 22 - Apr. 29	+ or - Sebago's yield	+30	-10	+20
Kenneth Griffin,	B6987-56	290	21	311
Elkton[1/],	Sebago	219	19	238
Jan. 28 - May 13	+ or - Sebago's yield	+71	+2	+73
Mean	B6987-56	276	15	291
	Sebago	224	17	241
	+ or - Sebago's yield	+52	-2	+50

1/ Yields determined by harvesting and grading a 1/10 acre plot of each clone.

2/ Yields determined by harvesting and grading of four 20 ft. plots from each clone. Plots were paired and selected at random from 1/10 acre plantings.

PACIFIC NORTHWEST (IDAHO & EASTERN OREGON)

J. J. Pavek, D. R. Douglas, D. L. Corsini, R. E. Ohms, C. Stanger

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Greenhouse crossing and production of seedling tubers continued at about the same level as in 1974. Approximately 30,000 single-hills were grown in a scab and Verticillium infested field at Aberdeen; 1541 were selected. Out of 1409 12-hill plots 372 were selected for further testing.

Yield Trials

Weather. Wet weather delayed spring planting by about two weeks. May temperatures averaged 2.3° F below normal in eastern Oregon and 5° F below normal in central and eastern Idaho. June was about 1° F below normal at the three locations, followed by July temperatures that were above normal by 4° F in eastern Oregon, by 3° F in central Idaho, and 2° F in the east. August averaged 3 to 4° F below normal and early September averaged above normal. The shift from cool June to hot July coupled with slightly inadequate irrigation at Aberdeen and Twin Falls caused many pointed and malformed tubers which made french fries with dark ends.

The advanced late harvest yield trials were conducted at Aberdeen, Twin Falls (Kimberly), and Malheur County, Oregon. The soil at each location was of silty loam; fertilization was according to soil tests, and water was applied as needed with sprinklers at Aberdeen and in furrows at the other two locations. The tuber yields and quality data are presented in PNW Table 1 for nine selections showing the most promise of becoming varieties out of a total of 17 in the trials. Most of the tubers at Aberdeen were malformed to some degree because of the irrigation and cultivation difficulties.

The advanced early harvest yield trials were conducted at two locations. Planting occurred in the last week of April in Malheur County and May 13th at Aberdeen. Harvest at both locations was in mid-August. The results are presented in PNW Table 2. The specific gravities were lower than normal at both locations.

Disease reactions. All selections in yield trials were evaluated for reaction to artificially induced early blight and to naturally occurring Verticillium. The results are presented in PNW Table 3. The Verticillium appeared to be generally less severe than in 1974 probably because of the cooler season.

Distribution

A summary of the distribution of selections, named varieties, and seedling tubers made in 1975 is presented in PNW Table 4.

PNW Table 1. Advanced yield trial, tuber yields and quality (4 reps, 20 hills)

			U.S. No. 1			French Fries[2]				
	Loc.[1]	Total cwt/A	Tot. %	% Over 10 oz	Spec. Grav.	Color	% Dark Ends	Red. Sugar % DW	Baked[3] Tex.	Shape Russ.[4]
A68113-4	Ab	480	68	34	1.084	1.3	16	2.2	4.5	L (Wt.)
	TF	524	50	15	93	0.6	7		4.2	
	Mal	679	59	25	--					
A69657-4	Ab	392	80	40	87	1.0	17	2.2	3.7	O, lt.
	TF	445	65	23	95	0.6	0		4.2	
	Mal	616	86	37	102					
A66107-51	Ab	392	60	19	90	0.9	16	1.4	4.7	O, M.
	TF	374	47	11	96	1.0	20		4.8	
A68678-1	Ab	378	78	28	89	1.0	16	0.8	4.6	L-O, M
	TF	422	71	16	101	0.7	14		4.7	
	Mal	641	92	51	106					
A66122-3	Ab	378	65	32	76	1.3	0	2.1	4.7	L-O, M
	TF	413	58	16	83	0.6	14		4.6	
	Mal	574	82	39	92					
A69850-4	Ab	361	77	26	83	0.6	0	0.7	4.2	O (Wt.)
	TF	431	59	16	80	0.7	41		3.6	
	Mal	693	82	37	--					
Russet B.	Ab	337	55	16	78	1.3	25	1.8	4.6	L, M
	TF	390	55	18	83	0.7	39		4.5	
	Mal	504	72	27	90					
A66102-16	Ab	323	73	29	86	1.3	25	2.1	3.9	O, lt.
	TF	369	76	29	93	0.8	34		4.9	
	Mal	549	83	47	--					
A68681-1	Ab	284	38	12	76	1.0	40	1.3	3.6	L, M
	TF	365	69	14	82	0.5	38		4.0	
	Mal	561	81	22	97					
A6371-2	Ab	268	34	3	78	1.9	9	3.1	3.1	L, M lt.
	TF	426	68	19	91	1.0	6		4.1	
	Mal	547	69	19	100					

[1] Ab=Aberdeen, Idaho; TF=Twin Falls, Idaho; Mal=Malheur County, Oregon.

[2] French fried after 2 months in storage, temp. 45° F or above; 0.5 (lightest) to 5.0 (darkest).

[3] 1.0 (soggy) to 5.0 (dry, very mealy).

[4] L=long, O=oblong, lt=Light, M=medium, Wt=white.

PNW Table 2. Advanced early harvest yield trial (4 reps of 20 hills)

	Malheur Station (Oregon)					Aberdeen Station (Idaho)						
	Tot cwt/A	US #1 All	US #1 >10 oz	Spec. Grav.	FF[1] Clr	Tot cwt/A	US #1 All	US #1 >10 oz	Spec Grav.	FF[1] Clr	Shp	Russ.[2]
NDA8451-3	471	83	24	1.071	0.8	306	73	6	1.069	0.9	L	M
NDA8694-3	446	79	28	72	0.9	263	71	12	76	0.9	O	lt.
A6680-5	434	84	17	73	1.1	271	75	12	76	1.4	O-L	M
A68710-5	407	84	21	75	1.0	269	73	13	73	1.6	O-L	lt.
A66110-7	405	72	7	77	1.3	225	69	7	81	1.2	O	M
A68587-3	397	72	21	80	0.9	296	52	25	74	1.0	O-L	lt.
A66107-12	379	77	11	80	1.5	219	79	21	71	1.6	O	M
NDA8856-11	368	71	7	78	1.3	209	70	10	83	1.1	O	M
A68588-16	364	83	27	74	0.8	261	66	13	76	1.1	O	lt.
A67341-4	362	64	15	69	1.1	145	40	2	76	2.0	L-O	M
Hi-Plains	359	62	4	76	0.6	289	68	8	78	0.7	O	Sc.
A69827-10	356	75	15	77	1.1	209	67	12	76	2.1	O	M
A68599-1	353	73	14	80	0.8	225	60	10	77	1.7	O	M
Norgold	351	73	19	70	2.0	230	63	6	77	1.3	O	M
Pioneer	343	76	14	77	0.9	282	72	20	78	1.7	O	(Red)
Russet B.	331	53	4	74	1.0	183	45	5	75	1.8	L	M
A68683-13	320	58	4	77	0.9	260	59	11	77	0.7	O-L	M
A6673-1	302	71	13	71	1.3	280	47	10	67	1.6	O	M
A68709-2	280	71	9	78	1.4	194	54	4	77	1.8	O	Hv.
NDA7697-2	274	66	12	66	0.8	244	57	12	69	0.9	O	lt.

[1] Fried within 4 days of harvest, 0.5 (lightest) to 5.0 (darkest).

[2] Shape: L=long, O=oblong, L-O=long-oblong; Russeting: M=medium, lt=light, Hv=heavy, Sc=scaley.

PNW Table 3. Aberdeen early blight and *Verticillium* wilt reactions, mean values

	Entry	Early Blight[1/]			Verticillium wilt[1/]		
		Mat.	Leaves Infected %	Sev.	Mat.	Stems Infected %	Sev.
1.	A5400-15	3.2	30	1.9	3.6	9	1.3
2.	A6371-2	3.1	58	3.0	3.7	24	2.7
3.	A66102-16	3.2	33	2.1	3.8	3	0.8
4.	A66122-3	3.2	50	2.7	3.4	4	0.9
5.	A67490-2	3.3	50	2.9	3.6	7	0.2
6.	A68113-4	3.1	53	2.9	3.8	7	0.2
7.	A68457-7	3.0	82	3.7	3.6	1	0.5
8.	A68678-1	3.1	80	3.7	3.4	8	1.2
9.	A68681-1	3.0	77	3.1	3.5	3	0.8
10.	A68709-2	2.9	83	3.8	3.1	4	0.9
11.	A69327-5	3.2	70	3.5	3.8	7	1.1
12.	A69394-3	3.2	38	2.3	3.5	13	1.6
13.	A69657-4	3.0	65	3.3	3.1	16	2.0
14.	A69827-10	3.1	65	3.7	3.0	13	1.8
15.	A69850-4	3.4	45	2.6	4.3	6	1.0
16.	Nampa	3.0	65	3.7	3.2	22	2.4
17.	Russet B.	3.0	77	3.8	3.1	23	2.5
18.	Targhee	3.2	60	3.0	3.3	6	1.2
19.	A6673-1	2.8	88	4.5	2.9	30	2.9
20.	A6680-5	2.8	97	4.9	2.9	52	3.9
21.	A66107-12	2.9	83	3.9	2.9	28	2.8
22.	A66110-7	2.9	90	4.7	2.9	68	4.3
23.	A68587-3	2.9	42	2.5	3.2	18	2.2
24.	A68588-16	3.0	47	2.0	3.3	27	2.6
25.	A68599-1	3.1	87	4.5	3.1	52	3.8
26.	A68683-13	3.0	68	3.9	3.1	67	4.5
27.	A68710-5	3.1	73	3.8	3.2	47	3.6
28.	NDA7697-2	3.0	88	4.7	2.9	63	4.2
29.	NDA8451-3	1.5	100	5.0	1.0	100	5.0
30.	NDA8694-3	2.3	93	4.9	2.8	87	4.9
31.	A67341-4	3.0	55	2.2	3.1	13	1.7
32.	NDA8856-11	2.9	90	4.6	2.9	28	2.8
33.	Norgold R.	2.7	90	4.7	2.4	70	4.6
34.	Hi-Plains	3.1	77	4.0	3.3	23	2.4
35.	Pioneer	3.0	85	4.2	3.0	13	1.7

PNW Table 3. (continued)

	Entry	Early Blight[1/]			Verticillium wilt[1/]		
		Mat.	Leaves Infected %	Sev.	Mat.	Stems Infected %	Sev.
36.	A66124-3	3.2	52	2.3	3.3	7	1.1
37.	A66126-4	3.1	63	3.2	3.0	47	3.6
38	A67142-1	3.2	65	2.8	3.6	3	0.8
39.	A68689-1	3.0	80	3.9	3.0	25	2.5
40.	A69113-1	3.3	60	2.5	3.4	3	0.8
41.	A69173-2	3.1	65	3.1	3.2	12	1.5
42.	A69426-1	3.3	53	2.6	3.9	13	1.4
43.	A69823-2	2.9	98	4.8	2.5	65	4.2
44.	A69827-2	3.2	73	3.8	3.5	3	0.7
45.	A69827-4	3.1	60	3.3	3.5	22	2.4
46.	A69860-1	3.2	68	3.1	3.3	4	0.9
47.	A69868-2	3.1	73	3.7	3.3	12	1.5
48.	A69870-10	3.1	52	2.4	3.3	5	0.8
49.	A70269-3	3.1	50	2.8	3.6	9	1.2
50.	A70271-6	3.2	38	1.9	3.5	15	1.8
51.	A70286-2	3.1	70	3.8	3.2	20	2.2
52.	A70498-3	3.3	18	1.3	3.5	2	0.6
53.	A70512-12	3.2	45	2.1	3.5	7	1.0
54.	A70727-3	3.4	35	2.2	3.6	0	0
55.	A70758-3	3.3	40	2.8	3.4	4	0.8
56.	A701004-10	3.2	53	2.9	3.5	4	0.8
57.	A701057-5	3.1	77	3.9	3.1	32	2.9
58.	A701087-3	3.1	60	2.9	3.0	33	3.1
59.	ATD27-1	3.2	57	3.2	3.5	13	1.5
60.	BA8311-2	3.2	50	2.8	3.5	14	1.8
61.	B8130-1A	3.3	42	2.5	3.5	15	1.8
62.	C12-1	3.1	65	3.7	3.2	40	3.1
63.	C36-5	3.7	48	2.4	4.1	7	0.7
64.	A6948-4	3.0	72	3.4	3.0	5	0.6
65.	A69337-6	3.0	62	3.3	3.1	55	4.2
66.	A70270-3	3.1	70	3.3	3.2	30	2.9
67.	A70509-2	3.0	68	3.6	3.1	33	2.9
68.	A70812-2	3.1	88	4.5	3.4	15	1.8
69.	A701040-3	2.8	73	3.4	2.9	25	2.7
70.	ALR4-2	3.1	75	3.5	3.3	16	2.0

PNW Table 3. (continued)

	Entry	Early Blight[1/]			Verticillium wilt[1/]		
		Mat.	Leaves Infected %	Sev.	Mat.	Stems Infected %	Sev.
71.	ALR22-1	2.9	80	4.3	3.0	18	2.1
72.	ALR22-2	3.0	95	4.8	3.2	62	4.3
73.	NDA9249-3	3.0	68	3.6	3.2	22	2.5
74.	NDA9265-1	2.9	93	4.7	3.1	18	2.1
75.	NDA9268-2	3.0	95	4.9	3.0	50	3.8
76.	NDA9293-2	3.1	67	3.6	3.8	7	1.1
77.	NDA6993-13	2.8	93	4.8	3.1	12	1.4
78.	B7148-4	2.7	83	4.6			
79.	B7153-29	3.1	77	4.5			
80.	B7160-4	3.0	90	4.8			
81.	B7907-2	2.8	93	5.0			
82.	B7698-1	3.2	73	3.6			
83.	B7809-5	2.8	95	4.9			
84.	B7845-4	3.0	86	4.2			
85.	B7845-6	2.8	97	4.9			
86.	B7845-14	3.2	70	3.7			
87.	B7881-3	3.1	60	3.2			
88.	B7888-9	3.1	73	3.2			
89.	B7905-2	2.3	100	5.0			
90.	B7914-2	2.8	98	5.0			
91.	B8004-8	3.1	88	4.8			
92.	B8019-7	3.7	45	2.8			
93.	B8073-3	2.8	100	5.0			
94.	B8101-3	2.8	100	5.0			
95.	B7907-8	3.1	40	2.5			
96.	B7907-8	2.9	45	2.9			
97.	B8132-4	2.7	98	5.0			
98.	B8148-4	3.1	90	4.6			
99.	B7907-9	2.9	93	4.9			
100.	B8128-3	3.1	75	4.0			
101.	B7165-8	3.0	72	3.3			
102.	B8178-1	2.3	100	5.0			
103.	B8178-4	3.0	100	5.0			
104.	B8181-1	3.1	73	3.2			
105.	B8181-3	1.6	98	5.0			

PNW Table 3. (continued)

	Entry	Early Blight[1/] Mat.	Leaves Infected %	Sev.	Verticillium wilt[1/] Mat.	Stems Infected %	Sev.
106.	B8185-11	2.9	90	4.5			
107.	B8222-1	2.5	80	4.2			
108.	B8232-1	2.8	60	3.0			
109.	B8261-3	3.1	77	3.7			
110.	B8393-5	3.1	90	4.7			
111.	B8393-6	3.4	23	1.7			
112.	B8393-7	3.1	70	3.7			
113.	B26619-1	2.9	73	4.1			
114.	B26619-2	2.9	63	3.5			
115.	B26619-3	3.1	57	3.0			
116.	B26619-5	3.1	53	3.0			
117.	B8176-6	3.1	58	3.3			
118.	B8178-1	2.9	90	4.8			
119.	B8178-9	3.4	15	1.5			
120.	B8178-12	2.9	80	4.4			
121.	B8178-16	2.9	80	4.1			
122.	A6353-6	4.2	5	0.8			
123.	A6715-8	3.2	35	2.2			
124.	A67490-3	3.3	30	1.8			
125.	BA8290-1	3.1	40	2.3			
126.	Norchip	2.7	83	4.5			
127.	Snowchip				3.5	2	0.6
128.	Bison				3.2	18	1.8
129.	BA8182-3				2.5	63	4.3

[1/] Mat.=maturity, 1.0 (earliest) to 5.0 (latest); Sev.=severity, 1.0 (mildest) to 5.0 (most severe). Early blight scored on Sept. 2, Verticillium wilt on Aug. 28.

PNW Table 4. Distribution of Selections, Varieties, and Seedlings, 1975

Location	Cooperator	Number
Arizona	P. Bessey & W. Pew	42
California	R. Voss	161
Idaho	G. Anderson	4
	A. Boe	2
	M. Groskopp	2
	W. Henninger	3
	G. Kleinkopf	8
	R. DeRouche	4
	W. Sparks	3
	G. Vogt	11
	M. Willard	2
Maryland	L. Sanford	1
	R. Webb	4
Minnesota	F. Lauer	1
Nebraska	R. O'Keefe	1
North Dakota	R. Johansen	4
Oregon	J. Burr	8
	G. Carter	14
	T. Davidson	4
	M. Johnson	115
	C. Stanger	97
Texas	J. C. Miller Jr.	28
Washington	R. Kunkel	13
	M. Martin	25
Seedlings		(Families)
California	R. Voss	144

LOUISIANA

J. F. Fontenot, D. W. Newsom, R. J. Constantin, and H. M. Brewer

Potato Breeding and Development

Objectives. The principal objectives of the Louisiana potato breeding project are wide adaptability, high yield, frost-, heat- and drought-resistance, insect- and disease-resistance (particularly late blight and scab), improved culinary quality (including chipping quality, french frying quality, and baking quality), resistance to after-cooking darkening, improved storage ability, better shape and skin color and resistance to tuber greening. Development of an oblong russet type adapted to Louisiana conditions is highly desirable.

Other objectives are to gain a further insight into the physiological changes during rest and to ascertain the effect of growth regulators, applied as pre-plant, preharvest and postharvest treatments on the production, storage ability and quality of potatoes.

Justification. Very few Southern states have seen fit to include potato breeding as a research project for their state. Since none of these states, including Louisiana, produce certified seed potatoes it is of utmost importance that wide adaptability be our primary objective. We are unique in this respect because we realize unless a new clone will produce well in the areas of certified seed production (North) it will not be available for southern production no matter what its producing potential.

The potato ranks with rice and wheat as the world's leading food crops and is the world's leading vegetable crop. It is one of the cheapest sources of carbohydrates and furnishes appreciable amounts of Vitamin B and C. The per capita consumption of this vegetable has leveled off at approximately 100 pounds. The rapid expansion of the potato processing industry in the United States is one of the momentous developments in the field of food processing. This is coupled with the increase in per capita consumption of processed potatoes in the form of chips, frozen, dehydrated, canned and miscellaneous snack foods. For these reasons plus the fact a different type potato is needed for most uses it is paramount that the development of improved varieties be continued.

Important potato problems are also susceptibility or resistance to insects, diseases, frost, heat, drought, and greening and any scientific knowledge that can be obtained could help explain the physiological basis for these factors. Furthermore, any new information obtained that concerns rest, dormancy or suberization would certainly be a contribution.

Previous Work and Present Outlook. This project is responsible for development of Red LaSoda, and LaRouge and both are listed as being on the top ten most important varieties in this country. Another variety, LaChipper, is listed among the top twenty. Other varieties released are Rushmore, DeSoto and LaSoda. With the release of Red LaSoda and LaRouge, Louisiana farmers are able to produce approximately 100 bushels per acre more than before; not only was the yield increased, but so was the quality. For the first time Louisiana growers were able to provide a good potato for chipping by planting the LaChipper variety.

Due to the fact that potato production can be completely mechanized and can fit into large as well as small farm operations, it is predicted that the acreage of potatoes in this state will increase. This statement is made since some large cotton farmers are going out of the cotton business and are looking for crops that can be mechanized.

We have clones that possess wide genetic diversity for most objectives listed and should aid in obtaining desirable combinations.

Several studies have given some insight into factors that affect the physiological process of suberization and rest.

The breeding behavior of certain characters in potato progenies and selection efficiency in both the greenhouse and field have been investigated. Factors affecting after-cooking darkening, chipping ability and amylose content of potatoes have been studied. This laboratory has attempted to develop more reliable techniques for screening potato clones for resistance to common scab and greening.

Some Results Obtained in 1974: One of our potato breeding objectives is frost-resistance. In order to obtain desirable combinations we brought in widely diverse genetic material. Crosses between Solanum acaule and Solanum tuberosum were made and their progeny tested. Early generation progeny were poor in horticultural type and backcrosses were made to Solanum tuberosum. A number of clonal selections we now have are six generations away from these original crosses. Some of these lines are 91-237, 01-201, 11-24, 12-34, 12-36, 22-51, 22-78, and 21-103.

Twenty-four clones were selected at Rhinelander, Wisconsin, in 1974 that are related to Solanum acaule. Of all these clones 11-24 is the most promising and we entered it in the regional trial. Other clones we entered in the regional trial were 11-118 and 01-70. Only 74 first year clones were selected at Rhinelander, Wisconsin, this past fall.

Further research with the 1973 lines showed that 31-49, 31-83, 31-98, 31-143, 31-148, and 31-194 were outstanding in type. Extremely high yielding lines were 31-22, 31-52, 31-117 and 31-206. Excellent chipping lines were 31-30, 31-98, and 31-206. Lines having the least darkening after cooking were 31-14, 31-53, and 31-76.

Ten 1972 clones were selected as being best fit to accomplish our objectives. Line 21-71 was rated the most ideal. Ten 1971 clones were reselected in 1974 and the best are 11-24 and 11-118. Other outstanding lines are 71-82, 02-59, and 01-201.

Some Results Obtained in 1975. Approximately 10,000 first year clones were planted at Rhinelander, Wisconsin, in May 1975. These clones are progeny from 69 families and 261 individuals were selected in September 1975.

True seed from 47 families were planted in the greenhouse on 10/2/75 and 14,747 seedlings were transplanted on 10/30/75. Exactly 7,494 clones were selected at harvest on 1/14/76. No selections were made from five families.

In 1974 only 74 clones were considered worthy of selection. After further research, only eight clones are considered to have any value.

Nine clones selected in 1973 (Table 1) have been retained for further research.

The four top 1972 clones are 21-71, 22-78, 21-89, and 21-140 (Table 2).

Other desirable clones with great potential are 01-70, 11-24, 12-34, 11-118, and 11-208 (Table 3 and Table 4).

The best clones that were rated in the regional trial were 11-118, Wisc. 718, Minn. 3866, Norchip and Norland (Table 5).

Louisiana Table 1. Notes on 1973 clones grown at Burden in 1975.

Clone	Vigor[1/]	Maturity	Total Average Yield (Cwt/A)	Average Yield U.S. #1 (Cwt/A)	Average Percent U.S. #1	Specific Gravity	Chip Color[2/]	Fry Color[3/]	After Cooking Darkening[4/]
31-1	3.0	medium	113	62	55	1.059	3.8	2.8	1.8
31-14	3.0	"	81	40	49	"	4.5	2.0	1.4
31-22	4.0	"	116	56	48	"	5.0	3.3	2.0
31-30	2.0	"	91	52	57	"	-	-	-
31-49	4.0	late	129	67	52	"	-	-	-
31-52	4.0	"	70	52	74	"	4.0	1.3	1.8
31-53	2.0	medium	29	22	76	"	-	-	-
31-76	4.0	med. late	68	54	79	"	2.5	1.5	2.5
31-83	4.0	" "	103	78	76	"	4.0	2.0	2.5
31-92	2.5	medium	62	41	66	"	3.5	1.5	1.5
31-98	4.0	med.early	83	29	35	"	4.3	2.0	3.0
31-102	3.0	" "	142	59	42	"	3.3	2.0	2.0
31-114	4.0	late	117	82	70	"	3.8	1.0	2.8
31-117	3.0	medium	67	32	48	"	-	-	-
31-124	3.0	"	155	98	63	"	4.5	3.8	2.0
31-128	3.5	"	113	46	41	"	4.3	3.0	2.8
31-143	4.0	"	105	76	72	"	4.3	3.8	2.3
31-148	4.0	med. late	84	59	70	"	3.3	2.0	1.8
31-150	4.0	" "	81	59	73	"	4.0	3.3	3.0
31-160	2.5	late	118	76	64	"	6.0	3.5	2.0
31-164	3.5	medium	69	42	61	"	-	-	-
31-171	3.0	"	68	23	34	"	-	-	-
31-191	2.5	med.early	101	64	63	"	-	-	-
31-194	2.5	" "	105	65	62	"	-	-	-
31-206	2.5	" "	95	79	83	"	-	-	-

[1/] Vigor: 1 = weak; 5 = very vigorous

[2/] Rating 1-10: 1 = most desirable; 10 = least desirable

[3/] Rating 1-5: 1 = most desirable; 5 = least desirable

[4/] Rating 1-5: 1 = most desirable; 5 = least desirable

Louisiana Table 2. Notes on 1972 clones grown at Burden in 1975.

Clone	Vigor[1]	Maturity	Total Average Yield (Cwt/A)	Average Yield U.S. #1 (Cwt/A)	Average Percent U.S. #1	Specific Gravity	Chip Color[2]	Fry Color[3]	After Cooking Darkening[4]
22-11	3.0	med.early	158	135	85	1.059	5.0	1.5	3.0
21-14	3.0	medium	38	29	76	1.059	6.0	4.0	2.0
21-51	3.0	"	48	37	77	1.059	7.8	3.5	-
21-71	4.0	"	73	68	93	1.059	4.5	1.5	2.3
22-78	4.0	"	144	102	71	1.059	6.3	2.0	2.0
21-89	2.5	"	73	57	78	1.059	6.0	2.5	3.8
LaChipper	3.0	"	69	63	91	1.059	4.8	1.3	3.0
21-103	4.0	late	90	76	84	1.059	5.0	3.5	1.8
22-122	4.0	"	91	68	75	1.059	7.0	4.0	2.5
21-140	3.0	med.early	94	69	73	1.059	4.0	2.5	2.3

[1] Vigor: 1 = weak; 5 = very vigorous

[2] Rating 1 - 10 (1 = most desirable; 10 = least desirable)

[3] Rating 1 - 5 (1 = most desirable; 5 = least desirable)

[4] Rating 1 - 5 (1 = most desirable; 5 = least desirable)

Louisiana Table 3. Notes on 1971 clones grown at Burden - 1975

Clone	Vigor[1/]	Maturity	Total Average Yield (Cwt/A)	Average Yield U.S. #1 (Cwt/A)	Average Percent U.S. #1	Specific Gravity	Chip Color[2/]	Fry Color[3/]	After Cooking Darkening[4/]
LaChipper	3.0	med.early	54	45	83	1.059	4.8	1.3	3.0
11-24	4.0	" "	118	94	80	"	4.5	2.5	2.3
12-34	4.0	late	108	76	70	"	-	-	-
LaRouge	3.5	med. late	75	60	80	"	5.8	3.8	2.3
11-94	3.0	late	80	59	74	"	5.3	3.0	2.0
11-103	2.0	"	17	15	88	"	7.5	3.8	-
11-105	1.5	early	39	29	74	"	4.0	2.5	2.3
11-118	3.0	medium	66	51	77	"	3.0	1.8	2.3
12-206	4.0	med. late	39	23	59	"	9.5	4.0	2.5
11-208	3.0	medium	129	111	86	"	5.5	2.5	2.3

[1/] Vigor: 1 = weak; 5 = very vigorous

[2/] Rating 1-10 (1 = most desirable; 10 = least desirable)

[3/] Rating 1-5 (1 = most desirable; 5 = least desirable)

[4/] Rating 1-5 (1 = most desirable; 5 = least desirable)

Louisiana Table 4. Notes on other clones grown at Burden in 1975.

Clone	Vigor[1]	Maturity	Total Average Yield (Cwt/A)	Average Yield U.S. #1 (Cwt/A)	Average Percent U.S. #1	Specific Gravity	Chip Color[2]	Fry Color[3]	After Cooking Darkening[4]
71-82	4.0	late	82	73	89	1.059	4.3	3.3	-
11-24	4.0	med. early	92	70	76	"	4.5	2.5	2.3
12-34	4.0	late	117	82	70	"			
12-59	4.0	late	53	26	49	"	7.5	4.0	2.3
01-70	3.5	medium	73	57	78	"	4.0	3.0	2.8
01-115	2.0	early	37	31	84	"	4.8	3.0	2.5
22-51	4.0	med. early	32	28	88	"	7.8	3.5	-
Red LaSoda	4.0	med. late	108	68	63	"	5.8	3.8	2.3
LaRouge	3.5	med. late	32	30	94	"	5.8	3.8	2.3
LaChipper	3.0	medium	58	49	84	"	4.8	1.3	3.0

[1] Vigor: 1 = weak; 5 = very vigorous

[2] Rating 1 - 10 (1 = most desirable; 10 = least desirable)

[3] Rating 1 - 5 (1 = most desirable; 5 = least desirable)

[4] Rating 1 - 5 (1 = most desirable; 5 = least desirable)

Louisiana Table 5. North Central Regional Potato Trials - 1975.

Variety	Vigor*	Aver. Mat.	Total Aver. Yield	Aver. Yield U.S. #1	Aver. Percent U.S. #1	Aver. Total Solids	Total Solids Per Acre	Gen.** Merit Rat.	Chip*** Color	French**** Fry Color	After***** Cooking Darkening
Red LaSoda	4.0	med. late	155.7	134.5	86	15.2	2,366.6	Not rated	5.8	3.8	2.3
Norland	2.0	med.early	74.2	60.0	81	15.2	1,127.8	5	5.0	1.5	3.3
Norchip	2.5	medium	103.5	89.2	86	15.2	1,573.2	4	4.8	1.3	2.0
Wisc 718	3.5	late	111.8	93.3	83	15.2	1,699.4	2	3.3	1.5	3.5
Wisc 726	4.0	med. late	114.4	102.8	90	15.2	1,738.9		3.3	2.0	2.5
Wisc 729R	3.5	late	74.4	61.3	82	15.2	1,130.9		4.0	2.0	2.0
Neb 43.66-1	3.5	med. late	76.5	69.4	91	15.2	1,162.8		7.0	2.5	2.8
Neb 42-1	4.0	late	48.6	37.0	76	15.2	738.7		4.8	2.5	-
NDak 8888-2	2.5	med.early	121.4	76.2	63	15.2	1,845.3		5.5	1.3	1.5
NDak 8891-3	3.0	med. late	139.8	102.8	74	15.2	2,125.0		6.0	2.3	1.5
NDak 8947-2	2.5	med.early	83.8	75.6	90	15.2	1,273.8		5.0	2.0	2.3
La 01-70	3.5	medium	136.1	105.1	77	15.2	2,068.7		4.0	3.0	2.8
La 11-24	3.5	med.early	130.0	106.2	82	15.2	1,976.0		4.5	2.5	2.3
La 11-118	4.0	medium	165.5	126.0	76	15.2	2,515.6	1	3.0	1.8	2.3
Minn 3866	3.0	late	148.4	99.4	67	15.2	2,255.7	3	4.8	2.0	2.0
Minn 4858	2.0	med.early	134.4	80.4	60	15.2	2,042.9		2.8	2.5	2.5
Minn 5072	2.0	" "	96.9	72.9	75	15.2	1,472.9		5.0	2.3	3.0
Alaska 5	3.0	medium	141.1	67.0	47	15.2	2,144.7		5.5	3.5	2.5
Red Pontiac	3.0	med. late	126.8	116.4	92	15.2	1,927.4		7.0	3.5	3.3
Russet Burbank	4.0	late	72.1	60.6	84	15.2	1,095.9		6.3	3.0	1.5

*Vigor: 1=weak;5 = very vigorous

**Place top five among all entries including check varieties; disregard maturity classification. (Rate first, second, third, fourth and fifth [in order] for overall worth as a variety.)

***Chip Color: Rated 1 (lightest) to 10 (darkest). Fried 6/12/75; read 6/12/75.

****French Fry Color: Rated 0 (white) to 4 (dark). Fried 6/13/75; read 6/13/75

*****After Cooking Darkening: Rated 1 (white) to 5 (gray). Boiled 6/17/75 a.m.; read 6/17/75 p.m.

MAINE

Robert V. Akeley, Alvin F. Reeves, and Robert B. Long

Potato Breeding

The principal objectives of the Potato Breeding Program of the University of Maine have been to produce high yielding, early maturing varieties which are adapted to Maine growing conditions; of high specific gravity, of good culinary qualities; resistant to virus X, scab, verticillium wilt, late blight, and tuber greening; and low in total glycoalkaloid content. Varieties resistant to the leafroll virus will be a future goal, especially as replacements for Katahdin and Russet Burbank.

With these objectives in mind, 57 parents exhibiting various combinations of these characteristics were intercrossed throughout March and April, 1975. From 16 such crosses, 5,469 true seed were grown to maturity in 3" pots at the Aroostook Farm greenhouse from June to October. Single tubers were harvested from each pot for planting as single hills in 1976.

At Masardis, Maine, 29,748 single hill seedlings were grown and examined; approximately half of these were obtained from C. Cunningham and R. Nickerson of the Campbell Soup Farm. From this planting 1,149 were selected for increase and evaluation in 1976.

Of the 1,245 seedlings selected from the 1974 single hill planting, 162 seemed worthy of further evaluation, based on yield, maturity, and tuber qualities. These will be tested for culinary qualities, tuber greening, X resistance, and specific gravity before replanting in 1976. Those which pass these tests will be subjected to further screening for resistance to late blight, early blight, scab, verticillium wilt, and ring rot.

From the 170 seedlings (originating from the 1973 planting) tested for resistance to ring rot, verticillium wilt, late blight, and uncommon scab, 31 had no late blight lesions and 38 showed trace amounts; 88 were resistant to verticillium wilt; and 10 showed a trace to light scab infection. Of 247 selections tested for total glycoalkaloid content, 212 had acceptable levels. Low tuber greening levels were found in 24 of 240 selections tested; resistance to virus X in 58 of 240 tested.

The data presented in Tables 1 - 7 are from yield tests of advanced selections (1972 or earlier). Those grown at Perham, Maine, were planted May 30, killed September 8, and harvested September 18. Those at Presque Isle, Maine, were planted May 16, killed August 25, and harvested September 11.

Maine Table 1. Summary of General Purpose Yield Test At Aroostook Farm, Presque Isle, Maine, 1975.

Pedigree number	Yield US 1 Cwt/Acre	%	Specific gravity	Tuber description Rating[1]	Color[2]	Shape[3]	Maturity[4]	Chip color[5]/[7]	French fry Color[5]/[8]	French fry Texture[5]/[9]	Chip color[6]/[7]	French fry Color[6]/[8]	French fry Texture[6]/[9]
WC 304 - 1	307	94	77	4+	D Ru	L,R	ML	8.0	1.7	1.0	10.0	3.1	1.5
WC 314 - 2	226	88	86	3	M Ru	L,R	ML	9.2	1.4	1.0	10.0	4.6	1.2
WC 315 - 1	221	89	87	3	M Ru	L,R	ML	9.3	3.0	1.0	9.8	3.8	1.2
WC 325 - 1	192	92	81	3-	M Ru	L,R	L	7.5	1.2	1.0	10.0	5.0	1.0
BR7051 -36	221	89	88	3	W	O	L	5.0	1.0	1.0	5.2	1.0	1.2
BR7086 -30	192	92	81	3	W	R	M	5.0	1.0	1.0	4.5	1.0	1.0
BR7090 -17	267	92	82	3	W	Ob,R	M	5.5	1.0	1.0	5.4	1.2	1.0
BR7093 -42	260	96	75	3	W	Ob,R	ML	5.0	1.0	1.0	4.8	1.0	1.2
WC 316 - 7	242	85	79	3+	Ru	L,R	L	9.4	2.4	1.0	8.8	4.6	1.0
WC 420 - 1	297	84	76	3+	L Ru	L,R	E	9.1	2.6	1.0	10.0	4.3	1.0
Bison	240	93	74	4	DR	R	E	6.5	1.0	1.0	8.8	2.0	1.0
ND7878 - 1	226	94	76	3	W	R	E	7.0	1.0	1.0	7.5	2.8	1.1
Wischip	260	92	84	3	W	R	M	4.5	1.0	1.0	5.0	1.0	1.0
AF 10 - 8c	204	92	77	4	Ru	L,R	L	6.9	1.0	1.7	10.0	3.8	1.6
AF 11 -12c	311	89	87	3+	W	Ob,R	E	8.8	2.1	1.0	9.0	4.2	2.8
AF 14 - 3c	242	89	90	3	W	L	ML	6.8	1.5	1.0	7.3	1.8	1.0
AF 17 -18c	300	91	80	3	W	Ob-L,O	ME	7.4	1.8	1.0	7.0	4.1	1.5
AF127 - 3c	173	82	83	4	M Ru	Ob	M	6.5	1.5	1.0	7.0	1.1	1.3
CD121 - 1c	304	99	86	4	B	L,R	E	5.0	1.0	1.2	6.4	1.3	1.2
CD139 - 9c	271	92	91	4	net	Ob,O	E	6.0	1.0	1.0	5.0	2.2	1.3
B 6965-10	324	96	96	3	W	Ob,R	L	3.5	1.0	1.0	5.0	1.0	1.0
BR7093-20	282	97	91	3	W	Ob,R	E	4.0	1.0	1.0	5.5	1.0	1.0
BR7093-23	305	89	85	3	W	Ob,R	L	5.5	1.0	1.0	6.6	1.2	1.0
Kennebec	308	96	78	3+	W	Ob,R	ML	7.0	1.6	1.0	9.4	3.4	1.0
Superior	300	97	87	3+	W	Ob,R	M	6.5	1.1	1.0	7.5	2.2	1.0
Bayes LSD (0.05)	44	3	5										

Maine Table 1. (continued)

1/ 1 = poor; 5 = excellent.

2/ W = white, B = buff, Ru = Russet, R = Red, Pi = Pink, L = light, M = medium, D = dark.

3/ Length, width. Ob = oblong, L = long, O = oval, R = round, th = thin, Fl = flat.

4/ E = early, M = medium, L = late.

5/ Samples held at 50° F until cooked December 11 - 18, 1975.

6/ Samples stored at 38° F, reconditioned at 70° F for three weeks until cooked February 10 - 18, 1976.

7/ 1 = pale; 10 = dark. 3 - 7 acceptable color.

8/ 1 = light; 5 = dark. 1 - 3 acceptable color.

9/ 1 = mealy; 3 = soggy.

Maine Table 2. Summary of Early Maturity Yield Test at Aroostook Farm, Presque Isle, Maine, 1975.

Pedigree number	Yield US 1 Cwt/Acre	%	Specific gravity	Tuber description Rating[1]	Color[2]	Shape[3]	Maturity[4]	Chip[5] color[7]	French fry[5] Color[8]	Texture[9]	Chip[6] color[7]	French fry[6] Color[8]	Texture[9]
AF 194 - 1	233	89	74	3	W	Ob	M	5.1	1.3	1.1	7.5	1.5	1.0
AF 201 -25	273	95	78	4	W	Ob	M	6.4	2.2	1.3	9.3	1.7	1.0
AF 204 - 4	298	93	81	3	W	Ob	ME	5.8	2.0	1.0	9.6	2.5	1.5
C 7232 - 6a	277	93	84	3+	W	Ob-O	ME	4.2	1.0	1.0	6.9	1.1	1.1
C 7250 - 3a	269	91	74	3+	W	L,R	E	8.0	1.8	1.0	9.9	3.9	1.2
C 7262 - 1a	287	92	69	3+	W	L,R	ME	7.6	2.1	1.3	9.6	3.2	1.7
C 7266 - 8a	289	88	78	3+	net	Ob,O	E	9.8	3.6	1.2	10.0	5.0	1.0
C72111 - 5a	249	88	88	3+	net	Ob,R	E	7.8	1.9	1.0	9.1	2.3	1.0
C72114 - 1a	212	79	71	3	W	Ob,R	ME	6.9	1.3	1.0	10.0	3.9	1.0
Superior	287	98	83	3-	W	O	ME	5.5	1.4	1.0	9.2	2.4	1.1
Norchip	256	87	86	3+	W	R	ME	5.0	1.5	1.0	6.8	1.0	1.0
I. Cobbler	285	95	84	3	W	Ob,R	E	7.0	2.7	1.0	8.6	2.3	1.0
Bayes LSD (0.05)	42	3	5										

1/ - 9/ see Maine Table 1.

Maine Table 3. Summary of Medium Maturity Yield Test at Aroostook Farm, Presque Isle, Maine, 1975.

Pedigree number	Yield US 1 Cwt/Acre	%	Specific gravity	Tuber description Rating[1]	Color[2]	Shape[3]	Maturity[4]	Chip[5] color[7]	French fry[5] Color[8]	Texture[9]	Chip[6] color[7]	French fry[6] Color[8]	Texture[9]
AF 170 -15	332	94	79	3+	W	L,O	M	6.2	2.5	1.0	8.4	3.0	1.0
AF 173 - 2	345	97	70	3	W	R	M	7.3	1.5	1.6	9.0	3.6	1.8
AF 183 - 3	341	89	72	4	B	Ob,R	ME	8.0	3.2	1.0	10.0	4.4	1.1
AF 184 - 5	351	93	79	3+	W	O	ME	9.9	3.7	1.4	10.0	5.0	1.0
AF 186 - 2	282	89	90	3+	W	Ob,R	M	4.0	1.0	1.0	4.7	1.0	1.0
- 5	278	89	80	3	W	Ob,O	M	4.5	1.0	1.0	7.1	1.2	1.0
AF 187 - 1	268	92	90	3+	W	Ob,R	M	7.0	2.2	1.0	7.3	2.1	1.0
AF 188 - 1	327	94	80	3	W	R	ME	7.3	2.4	1.3	8.9	2.1	1.3
AF 189 - 2	306	98	67	4	M Ru	L,R	ME	6.6	1.7	1.0	9.8	3.3	1.2
AF 193 - 4	341	93	82	4+	M Ru	L,R	ME	4.7	1.0	1.0	7.2	1.6	1.0
AF 200 - 1	330	98	71	3+	W	Ob,O	ME	7.7	2.4	2.0	10.0	4.3	2.0
AF 201 - 2	293	97	81	4	W	L,O	M	7.7	1.9	1.5	10.0	2.9	1.5
- 3	355	97	82	4	W	Ob-L,R	ML	6.5	1.7	1.0	9.5	2.9	1.0
AF 205 - 9	303	89	87	4	W	Ob	ML	4.0	1.0	1.0	5.8	1.0	1.0
AF 207 - 1	322	92	71	4	W	Ob-L	ML	6.6	2.4	1.8	10.0	3.0	2.5
AF 208 - 6	219	87	85	4	M Ru	L,R	E	5.6	1.5	1.0	9.5	2.5	1.0
C 7232 -11a	315	93	78	3+	LB	Ob,R	E	5.6	1.2	1.0	8.0	1.7	1.0
C 7267 - 4a	320	92	76	4	W	Ob,R	E	7.9	2.6	1.0	10.0	4.1	1.5
C 7268 - 1a	271	91	79	3+	net	Ob,R	M	7.2	1.4	1.0	10.0	3.6	1.0
C 7279 - 3a	319	95	81	4	W	Ob,R	ML	6.6	1.1	1.0	9.3	2.5	1.0
C 7289 -12a	341	98	79	3	W	Ob,R	L	7.2	1.9	1.8	9.5	3.0	1.0
C72107 - 6a	278	91	90	4	W net	Ob,R	L	9.5	3.9	1.0	9.5	3.5	1.0
C72107 -13a	355	96	84	3+	net	R	ML	6.2	1.0	1.0	10.0	3.2	1.0
C72107 -15a	302	95	81	4	W	R	ML	7.7	1.9	1.0	9.9	3.6	1.0
Kennebec	317	96	74	3+	W	L,R	L	7.2	1.8	1.0	10.0	3.2	1.0
Katahdin	270	96	74	3	W	R	ML	8.0	2.2	1.0	10.0	3.2	1.0
R. Burbank	200	72	81	3	M Ru	L,R	ML	8.4	3.1	1.0	10.0	4.2	1.0
Bayes LSD (0.05)	45	4	5										

1/ - 9/ See Maine Table 1.

Maine Table 4. Summary of Late Maturity Yield Test at Aroostook Farm, Presque Isle, Maine, 1975.

Pedigree number	Yield US 1 Cwt/Acre	%	Specific gravity	Tuber description Rating[1]	Color[2]	Shape[3]	Maturity[4]	Chip[5] color[7]	French fry[5] Color[8]	Texture[9]	Chip[6] color[7]	French fry[6] Color[8]	Texture[9]
AF 169 -16	199	73	80	3+	W	Ob,R	L	7.8	2.3	1.0	10.0	3.6	1.0
-18	341	92	77	4	W	Ob,R	L	8.8	2.1	1.0	10.0	4.7	1.0
AF 170 -11	183	92	77	3	W	Ob,R	ML	7.4	2.0	1.0	9.3	2.9	1.0
AF 173 - 8	258	95	74	4	W	Ob,R	L	7.2	1.6	1.0	10.0	5.0	1.6
AF 183 - 7	276	92	65	3	W	L,R	L	8.6	3.1	1.5	10.0	4.3	1.3
AF 188 - 8	214	82	86	3	W	Ob,R	M	5.1	1.0	1.0	7.3	1.0	1.0
AF 192 - 3	272	93	92	3	W	Ob-L,R	M	5.5	1.0	1.0	7.4	1.1	1.0
AF 197 - 1	265	87	87	3+	W(pi .eye)	Ob,R	L	6.3	1.5	1.0	9.0	2.8	1.0
- 6	297	87	82	3+	W	Ob-L,R	L	8.8	2.4	1.1	9.8	3.9	1.0
- 7	314	92	84	3	W	Ob-L,O	L	6.8	1.0	1.0	9.5	3.1	1.2
AF 200 - 6	268	93	82	3+	W	Ob,R	ML	7.0	1.9	1.0	9.5	2.3	1.0
AF 201 - 7	293	95	70	4	W	Ob-L,R	ML	9.8	4.0	1.2	10.0	5.0	1.6
C 7276 - 3a	275	94	73	4	B	L,R	ML	7.8	2.2	1.0	9.6	4.1	1.5
C 7279 - 5a	224	89	72	3+	W	Ob	L	6.5	1.0	1.0	9.7	3.0	1.0
C 7280 - 1a	280	95	78	3	W	Ob-L	ML	9.8	3.7	1.0	10.0	5.0	1.0
C 7286 - 7a	286	93	76	4	net	Ob	L	9.3	2.8	1.0	10.0	4.1	1.1
C 7289 -20a	275	93	82	4	W	Ob,R	L	8.8	2.4	1.0	9.1	2.5	1.0
C 7294 - 5a	262	97	86	3+	net	Ob,O	ML	3.5	1.0	1.0	6.5	1.0	1.0
C72111 - 4a	269	95	78	3	net	L,R	ML	8.5	3.3	1.3	10.0	4.4	1.0
Kennebec	297	94	73	4	W	Ob,R	ML	8.1	1.7	1.0	10.0	3.2	1.0
Wauseon	263	94	77	3	W	Ob,R	ML	6.1	1.5	1.0	10.0	3.1	1.0
Bayes LSD (0.05)	39	3	5										

1/ - 9/ See Maine Table 1.

Maine Table 5. Summary of Early-Medium Maturity Yield Test at Perham, Maine, 1975.

Pedigree number	Yield US 1 Cwt/Acre	%	Specific gravity	Tuber description Rating[1]	Color[2]	Shape[3]	Maturity[4]	Chip[5] color[7]	French fry[5] Color[8]	Texture[9]	Chip[6] color[7]	French fry[6] Color[8]	Texture[9]
B 7033 -33	172	90	88	3-	W	Ob,O	ME	6.9	1.0	1.0	8.7	2.3	1.0
BR7093 - 4	-	-	85	4	W net	Ob-L,R	-	6.6	1.0	1.0	10.0	3.0	1.0
AF 41 - 2	253	94	81	3	W net	Ob,R	M	6.7	1.0	1.0	7.4	1.6	1.0
B 7089 - 1	211	88	81	3	W net	L,R	ML	7.7	1.0	1.0	10.0	4.0	1.0
AF 76 - 7	-	-	80	3+	W	Ob,R	ML	7.3	1.9	2.0	8.6	2.6	1.0
AF 92 - 3	258	97	78	3+	W net	Ob,R	L	8.0	1.8	1.0	10.0	3.5	1.0
CD 10 - 5a	266	91	80	4	L Ru	Ob,R	ML	8.0	1.5	1.0	10.0	4.6	1.0
CD 13 - 2a	228	94	84	4	L Ru	L,R	L	8.3	1.6	1.0	10.0	4.5	1.0
CD 81 - 4a	191	91	72	3	W	Ob,R	LL	10.0	4.4	1.1	10.0	4.5	1.0
CD 79 -18a	278	93	70	3+	W	Ob-L,R	M	10.0	3.9	1.5	10.0	5.0	1.0
CD 108 -10a	202	88	81	4	M Ru	Ob-L,R	ME	7.2	1.0	1.7	9.1	3.3	1.0
CD 130 - 5a	176	91	92	3+	L Ru	Ob-L,R	M	7.0	1.0	1.0	8.2	2.3	1.0
AF 148 - 2	-	-	83	3+	W	Ob,O	L	7.9	1.5	1.0	9.5	3.8	1.0
B 6957 - 2	186	90	74	3-	D Ru	Ob,R	L	7.9	2.0	1.0	8.6	2.5	1.0
BR7093 - 2	154	92	87	4	W net	Ob,R	ME	7.5	1.0	1.0	8.4	2.7	1.0
CD 93 - 4a	280	93	78	3	W	Ob,R	L	10.0	4.0	1.0	10.0	5.0	1.0
AF 158 - 4	227	98	89	3	W	Ob,O	LL	7.3	1.2	1.0	8.2	2.8	1.0
Superior	242	97	88	3+	W net	Ob,R	L	8.0	1.7	1.0	8.3	2.1	1.0
I. Cobbler	225	89	82	3-	W	Ob,R	M	8.6	1.6	1.0	10.0	4.0	1.0
Bayes LSD (0.05)	45	6	4										

1/ - 9/ See Maine Table 1.

Maine Table 6. Summary of Medium-Late Maturity Yield Test at Perham, Maine, 1975.

Pedigree number	Yield US 1 Cwt/Acre	%	Specific gravity	Tuber Rating[1]	description Color[2]	Shape[3]	Maturity[4]	Chip color[5]	French fry Color[5]	French fry Texture[5]	Chip color[6]	French fry Color[6]	French fry Texture[6]
AF 32 - 8	319	95	69	3	W net	Ob,R	ML	8.8	1.8	1.1	9.9	4.3	1.3
AF 84 - 4	-	-	81	3-	W	Ob,R	ML	7.3	1.0	1.0	9.5	3.0	1.0
B 7163 -14	284	95	69	3	W net	R	L	8.0	1.5	1.0	9.7	3.5	1.0
CC 14 - 3a	199	92	68	3	W net	Ob,R	LL	6.6	1.0	1.2	6.6	1.1	1.0
CD 21 - 1a	233	94	79	3+	W	Ob,R	L	10.0	4.4	1.0	10.0	5.0	1.0
CD 104 - 5a	309	91	85	3	W net	Ob,R	L	9.9	2.7	1.0	10.0	4.8	1.0
CD 77 -10a	271	96	64	3	W	Ob,R	LL	9.8	3.6	1.0	10.0	5.0	1.0
AF 144 - 9	277	96	82	3+	W	L,R	M	8.1	2.3	1.2	9.0	1.8	1.0
AF 161 - 5	283	98	89	3	W(pi.eye)	L,R	L	6.9	1.0	1.0	9.4	2.4	1.0
B 6952 -10	222	94	89	3	W net	Ob,R	L	7.0	1.1	1.0	7.8	1.7	1.0
B 6986 - 2	199	97	83	3+	W net(pi.eye)	Ob,O	L	6.5	1.0	1.0	7.4	1.5	1.0
B 6987 -34	253	96	83	3+	W net	Ob,R	M	8.8	1.7	1.0	9.4	2.4	1.0
B 6987 -43	255	99	90	3-	W net	Ob,R	L	6.5	1.0	1.0	7.4	2.1	1.0
BR7093 -20	-	-	86	3	W net	Ob,R	ML	6.5	1.0	1.0	5.8	1.1	1.0
CD 130 - 1a	205	75	82	3+	W net	Ob,R	ML	8.9	2.5	1.0	10.0	5.0	1.2
B 7157 - 9	165	74	74	3+	M Ru	L,R	L	10.0	3.8	2.0	10.0	5.0	1.0
B 7583 - 6	259	94	85	4	M Ru	L,R	L	9.5	2.6	1.0	9.8	2.9	1.0
B 7637 - 7	178	86	78	4	M Ru	Ob-L,R	L	9.6	2.3	1.0	10.0	4.9	1.0
B 7645 - 5	-	-	70	4	M Ru	L,R	LL	9.4	1.5	1.0	10.0	4.2	1.0
B 7845 -29	266	89	76	3	M Ru	L,R	L	8.7	2.0	1.0	9.5	3.3	1.0
B 7848 -19	-	-	78	3+	M Ru	R	LL	7.9	1.5	1.0	10.0	4.0	1.1
AF 125 -15	287	97	83	4	W	R,th	L	7.1	1.0	1.0	9.0	3.5	1.0
B 6955 -35	219	88	87	3	W net	Ob,R	L	6.2	1.2	1.0	7.3	2.0	1.3
B 6987 -57	203	96	92	3	W net	Ob,R	M	7.3	1.0	1.0	7.8	2.8	1.0
Katahdin	265	95	75	3	W	O,Fl	L	8.4	2.3	1.1	10.0	4.0	1.1
Kennebec	279	96	68	3+	W	Ob,R	LL	9.4	2.2	1.0	9.4	4.1	1.0
Bayes LSD (0.05)	45	5	4										

1/ - 9/ See Maine Table 1.

Maine Table 7. Summary of Breeder's Yield Test at Perham, Maine, 1975.

Pedigree number	Yield US 1 Cwt/Acre	%	Specific gravity	Tuber description Rating[1]	Color[2]	Shape[3]	Maturity[4]	Chip[5] color[7]	French fry[5] Color[8]	Texture[9]	Chip[6] color[7]	French fry[6] Color[8]	Texture[9]
CC 17 -18a	212	92	89	3+	M Ru	L,R	M	5.7	1.0	1.0	8.7	2.3	1.0
CC 26 - 1a	284	92	88	3-	W	Ob,Fl	ML	7.3	2.0	1.0	7.4	1.1	1.0
CC 42 - 4a	280	89	77	3+	W net	L,R	M	7.0	1.0	1.0	8.4	2.4	1.0
CC 53 - 8a	337	91	73	4	W net	Ob,R	M	7.4	1.4	1.1	10.0	4.4	1.0
CC 54 - 3a	260	93	85	3-	W net	Ob,O	ML	4.5	1.0	1.0	7.0	1.0	1.0
CD 11 - 5a	257	86	75	3	W	Ob,R	L	7.2	1.0	1.0	10.0	3.7	1.0
CD 13 - 2a	294	91	83	3	M Ru	L,R	M	6.2	1.5	1.0	10.0	3.6	1.0
CD 31 - 1a	250	83	65	2+	W	Ob,R	LL	7.8	1.8	1.0	9.8	4.3	1.0
CD 73 -21a	300	89	71	3+	W	Ob,R	ME	6.4	1.9	1.0	9.2	2.7	1.0
CD 95 - 5a	194	84	77	3+	W	Ob-L,R	ME	5.6	1.2	1.0	8.5	2.3	1.0
CD 112 - 4a	302	90	78	3+	W	Ob,R	M	7.2	1.9	1.0	9.8	3.6	1.0
CD 124 -12a	291	94	74	3+	M Ru	Ob,R	ML	9.4	2.9	1.0	10.0	4.9	1.0
Kennebec	299	93	75	3+	W	Ob,R	L	6.7	2.0	1.0	9.5	2.9	1.0
Wauseon	243	90	74	2	W net	O	M	6.2	1.4	1.0	9.6	3.3	1.0
Bayes LSD (0.05)	46	4	5										

1/ - 5/, 7/ - 9/ See Maine Table 1.

6/ Samples stored at 38° F, reconditioned at 70° F for 26 days until cooked February 10 - 18, 1976.

MAINE

FREDERICK R. HOLBROOK

Green Peach Aphid Resistance

Two areas are being look at for potential aphid resistance:

1. Adverse gustatory response - if the plant were unfavorable as a food source, then a migrating aphid would "taste" and move on.

2. Adverse dietary quality response - even though the aphid may not reject the plant initially, it could be deficient in total dietary needs, so populations would not build up.

Gustatory Response. An electronic system that prints out a recording of aphid feeding is being used to screen selected lines under greenhouse conditions. Recordings of the feeding activity of green peach aphids on such exotic plants as avocado, Plumeria and cacti have indicated that the important factors are the number of probes per unit of time and the recognition of a peculiar probing pattern. This latter, which I call a "rejection pattern", has occurred in 40-60% of the recording made on unfavorable plants, but almost never occurs on a known host, in this case Katahdin, used as a control for all tests.

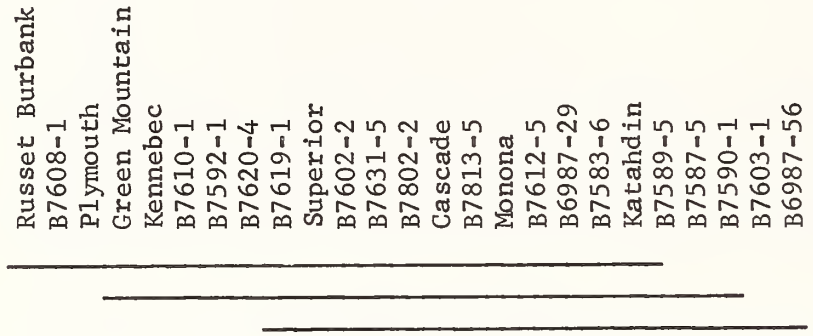
The following line numbers were tested in 1975: B7572-2; B7583-6; B7587-5; B7589-5, B7590-1; B7592-1; B7602-2; B7603-1; B7608-1; B7610-1; B7612-5; B7619-15; B7620-4; and B7631-5. Only B7608-1 and B7620-4 showed an indication of adverse aphid response and this was not significantly different from the control.

Population Response. Replicated field trials were conducted at Presque Isle, Maine, on 25 selected line numbers. Normal cultivation practices were followed, and a weekly application of carbaryl was applied to control aphid parasites and predators. Total counts of green peach aphids on three leaves per plant on two dates were subjected to analysis of variance and Duncan's multiple range test. Although differences were present, none were significantly different from the control.

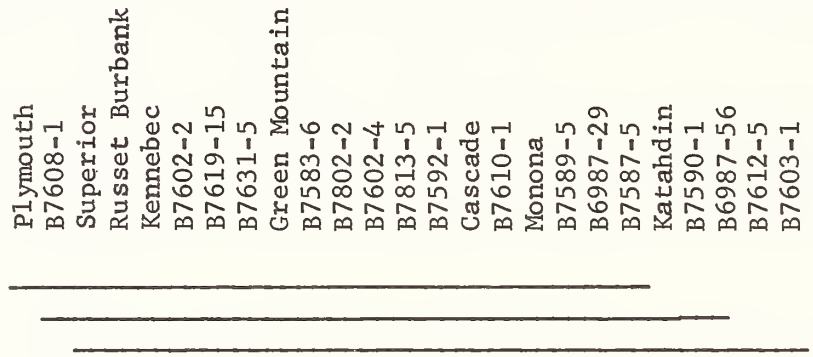
Maine Table 1. Statistical comparisons of field counts of aphids - 1975.



Green peach aphid



Total aphids



MAINE

S. S. Leach, Raymon E. Webb and David Wilson

Storability Characteristics of Katahdin, Kennebec and B6987-56. This is a new test which is to be conducted on all seedlings before they are named, to insure their storability. Katahdin and Kennebec will be used as checks for round whites and Kennebec and Russet Burbank for russet types. Eight hundred to a thousand pounds of each potato to be tested are grown and harvested under commercial conditions. At harvest samples are taken to determine bruise susceptibility. The remaining are transferred to the storage at Orono where each variety or seedling is divided into five lots for tests. Each lot is stored at three temperatures: 40° F, 45° F, and 55° F, with a relative humidity of 90 percent. The tests conducted are weight loss, with and without addition of sprout inhibitor; fry color of chips and french fries; bruising; disease severity; and appearance.

Bruising at Harvest. With a rating of one to five, with one equaling no bruising and five equaling bruising greater than .5 inch deep, Kennebec averaged 3.6; Katahdin, 2.2; and B-6987-56, 2.2, indicating that B6987-56 has fairly good bruise resistance under testing conditions. It was noted that B6987-56 tended to have more bruising but bruises were not deep, therefore the low score under this rating system. In the future a bruising index will be developed to correct this error. (Table I)

Weight Loss. Katahdin and Kennebec followed the general trend of weight loss when no inhibitor was applied with about seven to eight percent loss for the six month storage period, whereas B6987-56 had 14 percent weight loss. When a sprout inhibitor (one percent CIPC) was added, all weight loss was reduced and B6987-56 compared favorably to Katahdin and Kennebec. (Table I)

Processing Quality. Fry tests were conducted five times during the storage period. After frying, each potato chip and french fry were classified into color classes using the PC-11 reference color chart 1206-U. Line B6987-56 has overall processing quality equal or slightly better than Kennebec. (Table I)

Disease Severity. Disease severity readings were taken twice: at harvest and at removal from storage. Line B6987-56 is more susceptible to Fusarium tuber rot than Katahdin or Kennebec. (Table I)

Appearance and Sprouting. All potatoes stored at 40° F and 45° F were firm and bright, whereas those stored at 55° F with no inhibitor were flabby and dark in color. Tubers treated with an inhibitor and stored at 55° F were firm but still tended to be dark, due mostly to presence of silver scurf. All tubers treated with an inhibitor were sprout-free and no detrimental effects were observed. Of those not treated B6987-56 showed the most sprouting, with sprouts three inches long at 45° F and six to eight inches long at 55° F, compared to one inch long at 45° F and one to two inches long at 55° F in Katahdin and Kennebec. (Table I)

Overall Rating. Line B6987-56 is comparable to Katahdin and Kennebec under normal storage conditions (e.g., 40° F and 95 percent relative humidity). When stored at 45° F or 55° F, sprout growth is unsuitable unless treated with an inhibitor. Bruise susceptibility is high when harvested under cold conditions; therefore, it must be harvested under warm soil conditions. The one deterrent of this seedling is its high degree of susceptibility to Fusarium tuber rot.

Resistance to Fusarium Tuber Rot (Fusarium roseum 'Sambucinum'). Inoculum for this test was grown on potato dextrose agar. Spores were washed from seven day old cultures and adjusted to 5000 per ml. The tubers of the test clones were inoculated with a hypodermic syringe at the bud and stem ends. The inoculum (100 spores) was injected into the tubers 7 mm below the tuber surface. The inoculated tubers were stored in a controlled environment room maintained at 55° F and 95 percent relative humidity for 21 days. At the end of the storage period the tubers were removed and scored for tuber rot development and amount of sprouting. The degree of rot in a tuber was determined by cutting through the inoculation sites and measuring the length and width of the decayed area. Three tests were conducted and the average ratings are in Table 1. The average rating for the susceptible check Russet Burbank was 17.05. The average for the resistant variety Hudson was 11.65. No pedigree tested is believed to be immune to tuber rot at this time. Line B7861-2 looks very good and further testing may reveal a very high degree of resistance. (Table 2) A new observation was added this year: sprout growth during incubation period for the Fusarium test. In this test we found that B7861-2 did not sprout, thus adding an additional trait to this seedling. (Table 2)

Maine Table I. Weight loss, disease severity, bruising, processing quality, maintenance appearance, and sprouting of Katahdin, Kennebec potatoes stored for six months at 40° F, 45° F, and 55° F.

	KATAHDIN			KENNEBEC			B6987-56		
Storage Temperature	40° F	45° F	55° F	40° F	45° F	55° F	40° F	45° F	55° F
Weight Loss (%)									
No Inhibitor	4.4	5.9	9.5	6.2	6.5	6.9	6.0	12.9	14.2
Inhibitor	3.4	5.6	8.8	5.7	6.9	6.7	6.7	7.3	5.2
Disease Severity (%) 1/									
One month after harvest		1.6			2.7			5.9	
Six months storage		7.2			2.9			10.3	
Total		8.8			5.6			16.2	
Bruising 2/									
Harvest		3.6			2.2			2.2	
Five months storage	3.0	1.9	1.2	3.4	2.0	1.2	3.0	1.9	1.9
Cooking Quality									
Chip	8.5	7.2	4.8	8.2	6.0	4.0	8.8	6.6	3.8
Fries	4.2	3.2	2.7	4.0	2.9	1.8	3.9	3.1	1.8
Appearance									
No Inhibitor									
Firmness	Firm	Firm	Flabby	Firm	Fairly Firm	Flabby	Firm	Fairly Firm	Flabby
Color	Good	Good	Dark	Good	Good	Dark	Good	Good	Dark
Inhibitor									
Firmness	Firm	Fairly Firm	Fairly Firm	Firm	Firm	Firm	Firm	Firm	Fairly Firm
Color	Good	Good	Dark	Good	Good	Dark	Good	Good	Good
Sprouting 4/									
No Inhibitor	0	P-1"	1"	0	P-2"	1-2"	0	P-3"	6-8"
Inhibitor	0	0	0	0	0	0	0	0	0

1/ Reported as percent tubers with Fusarium tuber rot.

2/ Scored on rating 1-6, with 1=no bruising and 6=severe bruising. Composite sample at harvest.

3/ Average of five tests conducted on 12/30/74, 1/28/75, 3/4/75, 4/2/75 and 5/8/75. Rated using PCII Color Chart 1206-U.

4/ P = Piping

Maine Table 2. Varieties and pedigrees tested in Fusarium tuber rot resistance sprouting trials -- 1975-1976

Variety	Fusarium Rating 1/	Sprout Growth 2/
Abnaki	15.60	5
Hudson	11.65	1
Katahdin	18.15	3
Kennebec	16.45	2
La Chipper	14.95	4
Monona	14.85	2
Norchip	12.80	2
Norgold Russet	17.75	4
Russet Burbank	17.05	2
Superior	13.50	4
Wauseon	14.95	2

Repeat clones from 1974

Pedigree	Fusarium Rating	Sprout Growth
B7583-6	13.90	4
B7607-3	12.00	5
B7645-5	12.40	5
B7684-4	14.50	1
B7685-8	12.35	2
B7839-7	9.55	4
B7861-2	7.90	1
B7866-3	12.45	1
B7929-11	14.80	3
B7939-4	9.50	4
B7957-5	9.95	2
B8086-3	12.70	3
B8123-3	13.10	2
B8154-9	15.20	1

New Clones - 1975

Pedigree	Fusarium Rating	Sprout Growth
B6951-1	18.75	4
B6955-14	12.85	4
B6955-35	12.85	4
B6969-2	14.10	2
B6987-2	11.80	4
B6987-29	17.25	3
B6987-43	11.20	4
B7009-4	16.40	3

Pedigree	Fusarium Rating	Sprout Growth
B7127-1	13.58	2
B7139-4	14.30	2
B7151-4	12.60	2
B7155-3	11.65	2
B7164-25	13.00	5
B7165-8	16.75	4
B7167-2	14.90	3
B7200-26	14.05	2
B7516-1	15.90	2
B7516-3	17.15	5
B7516-6	13.00	2
B7516-9	14.40	2
B7573-3	16.50	4
B7592-1	12.60	4
B7608-2	12.85	2
B7610-1	15.65	4
B7618-6	18.25	2
B7620-4	9.55	4
B7620-7	13.55	3
B7621-2	14.40	2
B7631-8	13.75	2
B7636-15	22.90	4
B7650-9	13.80	4
B7668-2	11.80	4
B7680-3	8.55 3/	3
B7690-11	8.90 3/	4
B7680-12	12.45	3
B7763-3	25.90	3
B7769-4	16.95	4
B7802-2	10.78	2
B7805-1	10.80	2
B7828-3	19.90	4
B7828-9	22.45	4
B7828-18	16.25	2
B7832-2	13.50	4
B7845-23	18.90	2
B7858-5	11.10	2
B7897-1	18.35	3
B7902-2	14.65	2
B7902-8	9.80	1
B7910A-6	15.70	2
B7914-2	13.15	2
B7929-3	13.00	2
B7929-5	15.35	4
B8024-1	19.95	4
B8073-3	13.00	3
B8086-3	12.70	3
B8123-12	12.65	2
B8140-1	15.55	2
B8181-3	19.20	4

Pedigree	Fusarium Rating	Sprout Growth
B8185-4	11.85	2
B8185-6	15.50	1
B8186-3	19.85	4
B8206-2	9.30	4
B8210-3	15.05	4
B8218-4	16.05	2
B8264-1	14.55	2
B8280-8	7.10 3/	5
B8281-5	19.45	3
B8302-1	9.60	4
B8302-2	16.00	2
B8302-5	12.90	2
B8308-5	24.00	4
B8316-3	18.55	4
B8354-11	14.35	4
B8357-1	14.05	1
B8357-4	18.00	1
B8359-2	13.20	2
B8393-8	13.75	5

1/ Rating of seven (7) equals no observable disease present.

2/ Score based on length of sprout growth. One (1) equals no sprouting; two (2) equals piping; three (3) equals sprouts one-quarter inch long; four (4) equals sprouts one-half inch long; five (5) equals sprouts one inch long or longer.

3/ Needs confirmation.

MAINE - 1975

Hugh J. Murphy and Michael J. Goven

Cooperative variety trials were conducted in 1975 at Presque Isle, Grand Isle, and Newport, Maine. Soil and weather conditions were nearly ideal at time of planting, but were followed by a growing season of very high temperatures and with only about half of normal rainfall resulting in lower yields.

Plots at all test locations were single rows, 25 feet long and replicated six times per variety. Planting, killing, harvest dates, seedpiece spacing, and fertilizer used are presented in Maine Table 5.

Yields and specific gravities for varieties grown at all locations are presented in Maine Table 1. The five highest yielding varieties were: Hudson, CA02-7, Belleisle, Penn 71, and CA40-7. The seven highest ranking varieties in specific gravity were: York, B6986-26, B6503-5, B6986-56, B7167-2, BR7089-6, and CC26-1A. The lowest specific gravity recorded was 1.056, and the highest 1.089. Of the 72 varieties in one or more of the three tests, 41 were below 1.075.

Size determinations for two market size classes are presented in Maine Table 2. Several varieties grown at one or more of the three locations had very low percentages of U.S. #1 (size A) tubers - (2½ to 4 inches) due to dry soil conditions during late August and early September.

Results of the first chipping and french fry tests are presented in Maine Tables 3 and 4. Most varieties grown at Newport had acceptable chip color (7.0 or less) in 1975. At Presque Isle and Grand Isle, however, only 15 varieties of the 64 varieties had acceptable chip color at both locations. All except five of the varieties grown at Presque Isle had satisfactory (3.0 or less) french fry color.

Complete details of the Maine Cooperative Variety trials are presented in the Annual Maine, Massachusetts, New Hampshire, New Jersey, Pennsylvania, and Vermont Potato Variety Trials for 1975. This publication is available from Public Information and Central Services, University of Maine; Orono, Maine 04473.

Maine Table 1. Yield and specific gravity of potato varieties grown at Presque Isle, Grand Isle, and Newport, Maine - 1975.

Variety	Presque Isle		Grand Isle		Newport	
	Yield Cwt./A.	Specific Gravity	Yield Cwt./A.	Specific Gravity	Yield Cwt./A.	Specific Gravity
Belleisle	341	1.072	398	1.089		
Cobbler	261	1.078	296	1.076		
Hudson	394	1.058	396	1.072		
Katahdin	393	1.064	325	1.076	261	1.057
Kennebec	306	1.065	398	1.075	281	1.061
Monona					284	1.056
Nampa	316	1.072	313	1.075		
Nooksack	255	1.073	217	1.076	203	1.062
Norchip					337	1.073
Penn 71	345	1.063	396	1.075	353	1.064
Russet Burbank	325	1.075	348	1.083		
Targhee	303	1.067	292	1.073		
York	225	1.085	225	1.084		
AF41-2	292	1.079	355	1.076		
AF84-4	294	1.073				
B6139-11	392	1.077	347	1.089	318	1.068
B6503-5	231	1.087	255	1.084	276	1.072
B6529-12	319	1.081	387	1.074		
B6952-10	278	1.070	344	1.087		
B6965-10	339	1.079	304	1.087	261	1.070
B6986-2	297	1.080	330	1.081		
B6986-24	200	1.083				
B6986-26	254	1.090	293	1.082	301	1.079
B6986-137	278	1.070	232	1.088	265	1.071
B6987-1	352	1.070	340	1.078	308	1.062
B6987-2	265	1.080	280	1.077		
B6987-29	326	1.072	362	1.086	323	1.053
B6987-56	328	1.083	329	1.084		
B6987-184	342	1.086	344	1.094	278	1.065
B7008-3	260	1.083	245	1.080		
B7024-6	272	1.077	253	1.080		
B7033-33	269	1.078	321	1.087	305	1.071
B7147-8	258	1.077	314	1.086		
B7163-14	351	1.056				
B7167-2	247	1.080	251	1.087		
B7188-56					207	1.055
B7196-74					219	1.056
B7583-6	361	1.083	302	1.084		
B7583-19	202	1.065				
B7711-11	276	1.057	362	1.071		
B7732-2	305	1.070	346	1.074		
B7783-6	356	1.069				
B7813-5	237	1.063	284	1.071		
B7845-29	382	1.074	334	1.073		
B7848-2	258	1.071	292	1.077		

Maine Table 1 - continued.

Variety	Presque Isle		Grand Isle		Newport	
	Yield Cwt./A.	Specific Gravity	Yield Cwt./A.	Specific Gravity	Yield Cwt./A.	Specific Gravity
BR6316-5					265	1.062
BR6863-3					258	1.063
BR6864-9	309	1.070	395	1.070		
BR7088-18					283	1.070
BR7089-1	293	1.079	296	1.080		
BR7089-6	303	1.081	401	1.084		
BR7090-17	305	1.073	373	1.080	315	1.061
BR7093-5	301	1.064	346	1.077	290	1.065
BR7093-20					273	1.064
BR7093-23	385	1.070	388	1.077	307	1.055
BR7093-42	207	1.071	257	1.072	225	1.053
BR7093-48	245	1.066	306	1.072		
BR7103-1	299	1.082	338	1.079	317	1.065
BR7104-10	283	1.077	336	1.070	339	1.060
BR7108-1	306	1.074	297	1.079		
CA02-7	371	1.066	434	1.078	313	1.060
CA23-6	319	1.074	316	1.082		
CA28-2	317	1.070	341	1.076		
CA40-7	372	1.069	358	1.079		
CA46-11	266	1.075	358	1.078	321	1.065
CAM67-2	306	1.060	326	1.069		
CC26-1A	249	1.083				
CD08-30	309	1.080	318	1.079	236	1.065
CD137-5R	257	1.083	266	1.089	222	1.077
F61025					277	1.061
F6208	259	1.069	315	1.077		
WC330-1	320	1.077	323	1.073		
Bayes L.S.D. (0.05)	28	0.003	43	0.003	37	0.007

Maine Table 2. Percentage of yield between 1-7/8 and 4 inches in diameter for varieties grown at Presque Isle, Grand Isle, and Newport, Maine - 1975.

Variety	Presque Isle		Grand Isle		Newport	
	1-7/8 to 4 inches	2-1/2 to 4 inches	1-7/8 to 4 inches	2-1/2 to 4 inches	1-7/8 to 4 inches	2-1/2 to 4 inches
Belleisle	93.0	77.2	95.9	81.7		
Cobbler	93.8	47.9	91.6	27.1		
Hudson	95.8	87.1	97.1	87.5		
Katahdin	94.5	89.2	96.5	86.5	94.0	49.5
Kennebec	97.7	75.9	90.5	59.5	96.4	52.9
Monona					91.4	32.7
Nampa	64.4% 4 - 10 oz.		48.4% 4 - 10 oz.			
Nooksack	55.6% 4 - 10 oz.		68.6% 4 - 10 oz.		46.4% 4 - 10 oz.	
Norchip					90.1	23.5
Penn 71	97.3	76.0	91.2	74.8	96.0	60.6
Russet Burbank	63.0% 4 - 10 oz.		57.7% 4 - 10 oz.			
Targhee	61.8% 4 - 10 oz.		51.0% 4 - 10 oz.			
York	92.8	45.0	93.4	40.9		
AF41-2	97.4	55.3	93.8	41.2		
AF84-4	94.8	88.7				
B6139-11	94.4	85.3	93.8	78.5	89.8	32.3
B6503-5	94.5	49.8	96.0	44.9	90.8	15.8
B6529-12	95.6	83.1	94.0	82.0		
B6952-10	98.2	69.8	96.0	67.7		
B6965-10	97.6	91.0	97.1	85.8	95.3	38.8
B6986-2	95.7	83.4	91.8	78.8		
B6986-24	96.9	62.4				
B6986-26	97.9	73.1	95.3	65.4	94.3	52.3
B6986-137	97.1	62.5	96.5	65.6	87.6	19.5
B6987-1	95.0	61.1	97.6	76.8	94.4	38.1
B6987-2	96.2	59.2	96.2	50.7		
B6987-29	96.1	60.5	97.3	64.6	95.4	45.7
B6987-56	97.6	71.5	95.3	66.4		
B6987-184	97.6	92.7	95.9	88.4	93.7	32.0
B7008-3	95.9	74.5	95.0	66.7		
B7024-6	97.3	60.6	91.7	50.9		
B7033-33	98.1	72.0	95.7	72.7	96.1	67.0
B7147-8	57.2% 4 - 10 oz.		60.7% 4 - 10 oz.			
B7163-14	96.7	89.7				
B7167-2	98.3	70.1				
B7188-56					37.7% 4 - 10 oz.	
B7196-74					56.9% 4 - 10 oz.	
B7583-6	95.6	87.5	95.5	81.8		
B7583-19	66.0% 4 - 10 oz.					
B7711-11	59.8% 4 - 10 oz.		97.6	53.3		
B7732-2	96.7	65.2	97.2	66.0		
B7783-6	96.6	87.0				
B7813-5	53.4% 4 - 10 oz.		61.2% 4 - 10 oz.			
B7845-29	57.9% 4 - 10 oz.		60.1% 4 - 10 oz.			
B7848-2	88.3	9.9	50.8% 4 - 10 oz.			

Maine Table 2 - continued.

Variety	Presque Isle		Grand Isle		Newport	
	1-7/8 to 4 inches	2-1/2 to 4 inches	1-7/8 to 4 inches	2-1/2 to 4 inches	1-7/8 to 4 inches	2-1/2 to 4 inches
BR6316-5					90.7	19.0
BR6863-3					94.0	37.2
BR6864-9	95.3	61.9	94.5	68.4		
BR7088-18					95.4	45.7
BR7089-1	96.9	72.7	97.7	78.3		
BR7089-6	94.5	45.0	96.1	65.4		
BR7090-17	95.0	46.2	95.1	48.6	90.3	26.5
BR7093-5	85.1	81.5	90.6	86.7	95.5	59.6
BR7093-20					95.7	44.7
BR7093-23	94.6	88.7	95.2	83.7	91.4	40.2
BR7093-42	98.5	79.0	95.7	68.8	94.5	43.9
BR7093-48	95.8	86.9	95.3	78.8		
BR7103-1	95.9	60.4	93.5	70.5	94.3	46.3
BR7104-10	94.6	55.8	93.2	49.3	88.7	23.6
BR7108-1	95.4	50.0	93.5	58.9		
CA02-7	96.4	89.1	94.3	84.5	95.5	49.0
CA23-6	96.9	89.8	86.9	80.7		
CA28-2	52.9% 4 - 10 oz.		47.3% 4 - 10 oz.			
CA40-7	98.7	92.9	95.0	88.5		
CA46-11	97.1	54.1	93.9	56.4	94.8	46.1
CAM67-2	93.9	81.1	95.4	83.1		
CC26-1A	96.8	58.2				
CD08-30	97.6	82.9	96.0	82.6	95.5	44.4
CD137-5R	98.0	54.1	96.7	38.8	98.0	46.2
F61025					93.6	31.9
F6208	95.2	58.0	95.1	61.0		
WC330-1	53.6% 4 - 10 oz.		51.4% 4 - 10 oz.			

Maine Table 3. Chip color indices[1] for potato varieties grown at Presque Isle, Grand Isle, and Newport, Maine - 1975.

Variety	Presque Isle	Grand Isle	Newport
Belleisle	9.7	9.2	
Cobbler	9.0	8.1	
Hudson	10.0	10.0	
Katahdin	9.2	7.9	6.4
Kennebec	7.7	8.6	5.0
Monona			3.2
Nampa	10.0	9.7	
Nooksack	9.9	8.6	6.9
Norchip			4.3
Penn 71	7.4	7.3	4.8
Russet Burbank	8.9	7.9	
Targhee	9.7	9.7	
York	7.2	7.0	
AF41-2	7.5	7.5	
AF84-4	7.4		
B6139-11	7.3	7.5	4.3
B6503-5	4.2	5.5	4.0
B6529-12	6.5	6.9	
B6952-10	6.7	6.7	
B6965-10	6.6	4.8	4.0
B6986-2	6.4	4.6	
B6986-24	7.4		
B6986-26	6.9	6.4	4.0
B6986-137	5.2	5.7	3.3
B6987-1	7.8	7.5	5.1
B6987-2	7.5	7.1	
B6987-29	6.1	5.7	4.1
B6987-56	6.6	7.0	
B6987-184	6.6	6.6	
B7008-3	8.7	9.0	
B7024-6	6.0	6.9	
B7033-33	6.8	7.5	5.0
B7147-8	7.3	8.2	
B7163-14	8.5		
B7167-2	5.3	4.7	
B7188-56			4.1
B7196-74			5.4
B7583-6	9.9	9.1	
B7583-19	10.0		
B7684-7		8.3	
B7711-11	8.7	8.6	
B7732-2	7.8	9.4	
B7783-6	9.4		
B7813-5	8.9	8.7	
B7845-29	9.9	9.4	
B7848-2	8.9	9.0	

Maine Table 3 - continued.

Variety	Presque Isle	Grand Isle	Newport
BR6316-5			3.2
BR6863-3			4.1
BR6864-9	7.6	8.2	
BR7088-18			4.1
BR7089-1	7.1	7.1	
BR7089-6	7.3	7.3	
BR7090-17	5.4	5.8	4.2
BR7093-5	7.0	6.3	4.8
BR7093-20			3.3
BR7093-23	7.2	6.9	5.0
BR7093-42	5.5	4.5	3.8
BR7093-48	5.4	5.7	
BR7103-1	8.6	8.3	6.0
BR7104-10	8.1	8.8	4.4
BR7108-1	5.9	8.3	
CA02-7	8.3	7.9	4.9
CA23-6	8.7	7.5	
CA28-2	9.3	8.9	
CA40-7	9.6	8.9	
CA46-11	6.4	6.9	3.9
CAM67-2	8.7	8.9	
CC26-1A	7.8		
CD08-30	8.2	7.7	4.9
CD137-5R	9.0	9.5	6.3
F61025			5.1
F6208	8.7	9.7	
WC330-1	9.0	8.5	
Bayes L.S.D. (0.05)	0.7	0.7	0.7

[1]/Chips with lower index numbers are lighter in color.

Maine Table 4. French fry color and texture indices for potato varieties grown at Presque Isle, Maine - 1975.

Variety	Color Index[1]	Texture Index[2]
Belleisle	2.6	1.0
Cobbler	2.5	1.0
Hudson	3.8	1.0
Katahdin	2.8	1.1
Kennebec	1.9	1.0
Nampa	4.6	1.2
Nooksack	2.7	1.0
Penn 71	1.4	1.0
Russet Burbank	2.6	1.2
Targhee	3.7	1.0
York	1.4	1.0
AF41-2	1.4	1.0
AF84-4	1.3	1.0
B6139-11	1.4	1.0
B6503-5	1.0	1.0
B6529-12	1.0	1.0
B6952-10	1.0	1.0
B6965-10	1.2	1.0
B6986-2	1.1	1.0
B6986-24	1.3	1.0
B6986-26	1.3	1.0
B6986-137	1.0	1.0
B6987-1	1.5	1.0
B6987-2	1.3	1.0
B6987-29	1.0	1.0
B6987-56	1.1	1.0
B6987-184	1.4	1.0
B7008-3	3.0	1.0
B7024-6	1.3	1.0
B7033-33	1.4	1.0
B7147-8	1.5	1.0
B7163-14	2.0	1.3
B7167-2	1.0	1.0
B7583-6	2.8	1.0
B7583-19	4.0	1.2
B7711-11	2.5	1.0
B7732-2	1.9	1.1
B7783-6	3.1	1.1
B7813-5	2.6	1.1
B7845-29	2.9	1.0
B7848-2	2.6	1.4
BR6864-9	1.6	1.2
BR7089-1	1.5	1.2
BR7089-6	1.4	1.2

Maine Table 4 - continued.

Variety	Color Index[1]	Texture Index[2]
BR7090-17	1.0	1.0
BR7093-5	1.1	1.0
BR7093-23	1.3	1.0
BR7093-42	1.0	1.0
BR7093-48	1.0	1.0
BR7103-1	1.8	1.1
BR7104-10	2.0	1.0
BR7108-1	1.1	1.0
CA02-7	1.7	1.2
CA23-6	2.4	1.1
CA28-2	2.5	1.0
CA40-7	3.3	1.1
CA46-11	1.2	1.0
CAM67-2	2.5	1.0
CC26-1A	1.8	1.0
CD08-30	1.5	1.0
CD137-5R	2.9	1.0
F6208	2.3	1.0
WC330-1	2.9	1.2
Bayes L.S.D. (0.05)	0.5	0.2

[1]/ French fries with lower index numbers are lighter in color.

[2]/ Lower texture indices indicate mealier texture.

Maine Table 5. Pertinent information about Maine Cooperative Potato Variety Trials - 1975

	Presque Isle	Grand Isle	Newport
Planted:	May 14	May 15	May 9
Killed:			
Early varieties	August 22	August 23	August 29
Medium varieties	September 2	September 3	August 29
Late varieties	September 12	September 15	August 29
Harvested:			
Early varieties	September 2	September 4	September 10
Medium varieties	September 12	September 15	September 10
Late varieties	September 24	September 26	September 10
Fertilization:			
Pounds per Acre N, P_2O_5, K_2O	135-135-135	154-154-154	160-180-180
Seedpiece spacing:	[1]/	[1]/	[2]/

[1]/ Seedpieces of Nooksack and Targhee spaced 12 inches apart; Russet Burbank and Nampa spaced 16 inches apart; seedpieces of all other varieties spaced 8 inches apart.

[2]/ Seedpieces of Nooksack spaced 12 inches apart; all other varieties spaced 8 inches apart.

MARYLAND

R. W. Goth and R. E. Webb

Lack of Potato Virus S (PVS) Transmission via True Seed in Breeding Lines of *Solanum tuberosum* L.

Potato Virus S (PVS) which often infiltrates and spreads in developing potato, *Solanum tuberosum*, germplasm was not transmitted via true seed of progeny from the six infected parental lines, ATZ1MBA, DATAHDIN, GN70-3, A6334-19, or B6695. Microprecipitin and single-radial-immunodiffusion serological methods combined with indicator hosts *Nicotiana debneyi* Domin and *Chenopodium quinoa* Will, did not detect PVS in 1,028 greenhouse seedlings derived from crosses of the above mentioned parental lines. To arrive at an accurate assessment, we saved tubers from these seedlings and repeated the test procedure through two subsequent field and greenhouse tuber generations: PVS was not detected in any of these plants. We therefore concluded that PVS was not transmitted via true seed of these lines and suggest that true seed transmission of PVS in tetraploid potatoes is not an important factor in the infiltration and spread of PVS in potato germplasm developmental programs.

MINNESOTA

E. B. Radcliffe

Stability of Resistance in Selected, Entries of Wild Potatoes to Different Populations of Green Peach Aphid, Myzus persicae (Sulzer).

Populations of green peach aphids (GPA), Myzus persicae (Sulzer), from Minnesota and New York (Cornell) were established on entries of wild, tuber-bearing Solanum species and S. tuberosum cultivars on spatially separated replications at Grand Rapids and Rosemount Minnesota in 1974 and 1975 to assess possible differences in aphid response attributable to biotypes. Comparisons of entry mean differences revealed little evidence of consistent differences in the host plant responses of the 2 aphid 'biotypes'. S. spegazzinii (P.I. 208876) supported significantly higher populations of New York aphids both years; no other entry showed consistent biotype differences both years. One entry S. marinasense (P.I. 210040) showed a significant biotype difference in 1974 and 2 entries S. bulbocastanum (P.I. 275194) and S. pampasense (P.I. 275275) showed significant biotype differences in 1975 (Table 1). The stability of resistance against different GPA populations suggests aphid biotypes may not be a serious problem in breeding for resistance.

Table 1. Entries used in 1974 and 1975 in green peach aphid biotype study.

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acaule Bitt., PI 225620[a], PI 275130[a]; *berthaultii* Hawkes, PI 265858; *bulbocastanum* Dun., PI 275194[d], WRF 1565[a]; *chacoense* Bitt., PI 230582, PI 320285; *chomatophilum* Bitt., PI 365326; *commersonii* Dun., PI 320269; *demissum* Lindl., PI 201854; *fendleri* A Gray, PI 255543; *gandarillasii* Cárd., PI 283076; *hertingii* Hawkes, PI 251063, PI 251067; *hougasii* Corr., PI 161174; *huancabamense* Ochoa, PI 365406; *kurtzianum* Torr., WRF 330, WRF 890[a]; *marinasense* Vargas, PI 210040[c]; *medians* Bitt., PI 320261, WRF 1575; *microdontum* Bitt., PI 218224, PI 320306[a], PI 320315; *papita* Rydb., PI 262895; *pampasense* Hawkes, PI 275275[d]; *pinnatisectum* Dun., PI 275232; *polyadenium* Greenm., PI 320342; *polytrichon* Rydb., PI 184770, PI 184773; *raphanifolium* Cárd., WRF 1579[a]; *sanctae-rosae* Hawkes, PI 218221, PI 230464; *sogarandinum* Ochoa, PI 230510[a]; *sparsipilum* (Bitt.), PI 310972; *spegazzinii* Bitt., PI 205407, PI 208876[e], PI 275144; *stoloniferum* Schlechtd. & Bchè., PI 160226[a], PI 186563, PI 255532, PI 275248, PI 275249; *sucrense* Hawkes PI 230465[a]; *tarijense* Hawkes, PI 310981; *tuberosum andigena* (Juz. & Buk.), PI 184903, PI 280905, Unassign Oka 3943; *tuberosum tuberosum* (L.) Hawkes, 'Anoka'[a], 'Chisago'[a], 'Early Ohio'[b], 'Norgold', 'Norchip', 'Norland', 'Red Pontiac', 'Red Warba', 'Sebago', 'Shoshoni', 'Triumph'[b]; *venturii* Hawkes & Herting, PI 218220; *vernei* Bitt. & Wittm., PI 320332[a], PI 320333; *verrucosum* Schlechtd., PI 195172; *weberbaueri* Bitt., PI 265880.

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[a]Indicates entry was used in 1974 analysis only.
[b]Indicates entry was used in 1975 analysis only.
[c]Significant biotype differences in 1974 (Tukey's Method = .05).
[d]Significant biotype differences in 1975
[e]Significant biotype differences in both 1974 and 1975.

Mississippi

C. P. Hegwood, Jr.

Irish Potato Variety Trials

Location and Procedure. The 1975 Irish potato trials were conducted at the Delta Branch Experiment Station, Stoneville, Mississippi, which is located in the Yazoo-Mississippi Delta area. In a randomized complete block design with five replications, two cultivars and ten line selections were evaluated. Plot dimensions were 3.3 X 25 feet. Soil type was a Bosket sandy loam. Fertilizer (10-20-20) was applied in bands at the rate of 750 lbs per acre. Enide at the rate of 5 lbs/A was the herbicide used.

Climatic conditions. The growing season was from March 21 to June 24, 1975. The last spring freeze occurred on March 15. March precipitation totaled 10.78 in. (5.10 departure above normal); April - 5.89 in. (.80 in. departure above normal); May - 9.56 in. (4.98 in. departure above normal); June - 4.56 in. (.89 in. departure above normal).

Mississippi Table 1. Yield and quality data for two cultivars and ten line selections.

Entry Identification	Yield/A cwt				Specific gravity[1/]
	Total	A	B	Culls	
B 6516-15	153.2	135.2	18.0	21.1	< 1.060
B 6987-29	133.0	109.8	23.2	18.5	< 1.060
B 6987-43	185.0	155.2	29.8	18.0	< 1.060
B 6987-56	169.0	150.0	19.0	13.7	1.061
B 7139-4	127.5	100.0	27.5	38.0	< 1.060
B 7151-4	161.6	142.6	19.0	22.2	< 1.060
B 7152-14	148.9	126.7	22.2	28.5	< 1.060
B 7190-2	132.0	116.2	15.8	28.5	1.067
B 7654-12	152.1	132.0	20.1	19.0	< 1.060
B 7572-2[2/]	151.0	126.7	24.3	28.5	-----

1/ Specific gravity was determined by potato hydrometer.

2/ Observational entry - not replicated.

NEW JERSEY

C. E. Cunningham, R. L. Nickeson, F. L. Merwarth, and T. E. Snyder

Campbell Institute for Agricultural Research

From approximately 45,500 first year seedlings grown at the breeding farm in Perham, Maine, 1361 were saved for replanting in 1976. From the second stage of breeding - 16 hills - 959 selections were planted, and 132 were saved for processing tests and possible replanting. Eighty-five selections were saved from the third stage of breeding - 100 hills - for processing tests and possible planting in replicated trials in 1976.

Data reported are from replicated trials in New Jersey, Indiana, and Maine. Experimental design was a RCB, usually with four replicates. Plot size was 25 hills, with hills spaced ten inches apart, three feet between rows. Planting and harvest dates, fertilization and cultural practices were similar to those practiced in the areas in which the trials were located. Unless otherwise stated, chip color indices are from tubers stored at 40° F for two months or longer, then reconditioned two weeks at 70° F prior to frying.

Campbell Table 1. Yield, specific gravity, tuber rating, and chip color for entries grown at Elmer, New Jersey, 1975.

Selection	Yield over 2 inches cwt/A	Yield over 2 inches Percent	S.G.[1]	Tuber[2] Rating	Chip Color[3] Harvest	Chip Color[3] 2 wks. @ 40° F
BR6456-1	217	79	68	3.8	3.6	4.9*
BR6863-5E	233	76	69	2.6	3.3	3.7*
BR7085-1	188	69	83	3.3	3.7	5.8
BR7104-10	233	72	69	3.1	3.8	5.9
CA29-11	189	70	63	3.5	3.6	4.8
CA46-11	248	83	69	3.4	3.1	4.8*
CA60-2	253	87	66	3.1	3.4	6.9
CA61-3	242	73	85	2.9	3.4	4.8*
CC08-3	187	71	76	3.0	3.6	7.0
CC76-1	135	62	81	2.6	3.3	4.0*
CD07-22	125	70	61	3.1	3.8	6.1
CD23-1	100	54	73	4.0	3.1	3.7*
CD28-1	52	70	51	3.0	4.3	7.7
CD47-32	192	72	67	2.8	3.6	5.4
CD48-6	75	68	57	3.5	5.7	8.4
CD111-9	218	76	67	2.8	3.2	5.6
CD130-7R	201	73	80	3.0	3.2	5.1*
CD131-14R	126	65	62	3.3	3.6	6.0*
CD138-4R	226	72	62	2.6	5.2	8.4
CD139-9	205	77	74	4.0	3.2	6.3*
CD141-26	186	74	79	3.9	3.4	6.8*
AF14-3c	169	63	74	3.3	4.2	5.5
AF22-8c	233	81	65	2.9	4.1	7.2
AF22-11c	141	69	64	3.1	5.9	7.4
AF24-33c	125	67	78	3.4	4.0	4.7
AF41-9c	216	83	57	2.9	3.2	5.3*
G694-3Rd	217	87	59	3.5	3.8	8.6
G694-132	166	74	72	3.5	3.0	3.5*
Superior	267	85	70	2.9	3.6	6.3
Mean	186	73	69	3.2	3.7	5.8
LSD (.05)	61	9	5	0.5	0.6	1.3
(.01)	81	11	7	0.6	0.7	1.8
CV%	23	8	6	11	11	16

* good, uniform
** few dark centers

1/ 1.0 deleted
2/ 1 = poor to 5 = excellent
3/ PCII color scale
4/ 1 = mealy to 5 = soggy
5/ U.S.D.A. color standard; 1 = very light to 5 = dark brown

Campbell Table 2. Yield, specific gravity, tuber rating, and chip color for entries grown at Hudson, Indiana, 1975.

Selection	Yield over 2 inches cwt/A	Yield over 2 inches Percent	S.G.[1]	Tuber[2] Rating	Chip[3] Color
B6987-184	478	89	86	3.2	3.1
BR6863-5E	430	94	67	3.0	3.2
BR6864-6E	374	90	62	3.0	3.8
BR7085-1	464	94	72	3.8	3.9
BR7089-6	428	96	77	3.5	3.8
BR7093-23	467	92	66	3.5	3.3
BR7104-10	555	93	64	3.8	4.4
AF24-33c	398	94	75	3.2	3.2
AF25-18c	425	91	64	3.5	3.6
AF41-9c	394	96	62	2.8	4.0
AF42-10c	498	96	65	1.8	3.4
CA02-7	425	95	69	3.5	3.7
CA46-11	375	96	64	3.8	3.4
CA55-24	407	97	70	4.0	3.2
CA60-2	359	98	58	3.2	5.0
CA63-1	427	96	65	3.2	3.8
CA67-2	652	98	55	2.8	4.3
CC05-15	300	98	60	3.0	4.1
CC05-19	523	98	61	3.0	3.7
CC06-5	405	97	69	3.0	3.5
CC06-12	436	91	67	2.5	3.2
CC08-3	354	90	74	3.0	3.2
CC14-1	420	85	82	2.0	2.9
CC54-8	452	96	82	3.0	3.0
CD139-9	276	95	68	3.8	3.1
Katahdin	587	97	68	3.2	4.9
Superior	441	96	63	3.0	3.5
Wauseon	438	95	64	3.0	3.5
Mean	435	94	68		3.6
LSD (.05)	101	5	7		0.6
(.01)	133	6	10		0.8
CV%	16	3	8		11

1/ 1.0 deleted
2/ 1 = poor to 5 = excellent
3/ PCII color scale
4/ 1 = mealy to 5 = soggy
5/ U.S.D.A. color standard; 1 = very light to 5 = dark brown

Campbell Table 3. Yield, specific gravity, tuber rating, chip color and french fry color and texture for selections in the Soup Trial No. 1 grown at Perham, Maine, 1975.

Selection	Yield over 2 inches cwt/A	Yield over 2 inches Percent	S.G.[1]	Tuber[2] Rating	Chip[3] Color	French Fry Texture[4]	French Fry Color[5]
BR6456-1	327	96	84	3.1	8.0	2.1	1.8
BR6862-2	286	97	87	3.0	6.0	2.5	2.4
BR6864-6E	337	96	80	3.1	7.5	3.1	2.0
CA02-7	301	94	76	3.4	6.0	3.6	1.6
CA11-13	334	94	75	3.6	10.0	4.0	3.8
CA29-11	320	90	85	3.5	7.0	2.1	1.9
CA46-11	305	96	89	3.4	3.0	2.4	1.6
CA67-2	350	98	77	3.1	7.8	2.8	2.2
CC05-15	278	96	84	3.5	8.2	2.5	2.5
CC05-19	339	95	81	2.9	7.0	3.2	1.6
CC06-5	293	96	86	3.5	6.8	1.9	1.9
CC14-1	277	88	101	2.4	3.0	2.2	1.1
CC56-8	266	94	89	3.1	6.8	1.9	2.4
G694-3Rd	376	97	74	2.8	8.2	3.5	2.9
B6955-14	309	93	93	2.5	5.0	2.2	1.1
Wauseon	302	94	78	2.9	7.8	2.8	2.8
Katahdin	298	96	79	2.9	7.8	3.6	2.0
Norchip	293	88	90	2.5	4.2	3.2	1.8
Mean	311	94	84	3.1	6.7	2.8	2.1
LSD (.05)	42	3	4	0.4	1.1	0.9	0.8
(.01)	56	3	5	0.6	1.5	1.2	1.1
CV%	9	2	3	10	12	24	27

1/ 1.0 deleted
2/ 1 = poor to 5 = excellent
3/ PCII color scale
4/ 1 = mealy to 5 = soggy
5/ U.S.D.A. color standard; 1 = very light to 5 = dark brown

Campbell Table 4. Yield, specific gravity, tuber rating, chip color and french fry color and texture for selections in the Soup Trial No. 2 grown at Perham, Maine, 1975.

Selection	Yield over 2 inches cwt/A	Yield over 2 inches Percent	S.G.[1]	Tuber Rating[2]	Chip Color[3]	French Fry Texture[4]	French Fry Color[5]
CD03-4	174	88	84	2.5	6.0	2.1	2.0
CD08-29	220	96	88	2.5	6.8	2.4	1.9
CD12-18	252	90	85	2.9	5.8	2.1	1.1
CD28-1	127	81	78	2.2	7.8	3.4	2.0
CD37-3	272	96	68	3.5	9.2	4.0	2.6
CD47-32	201	76	82	3.0	9.0	3.2	3.0
CD48-6	206	82	76	3.1	9.8	4.0	3.0
CD51-4	207	94	89	2.4	4.8	4.0	2.0
CD111-9	217	95	82	2.4	6.0	2.1	1.9
CD124-1R	250	95	80	4.0	7.0	3.4	2.1
CD138-2R	142	74	89	3.0	5.2	2.4	1.8
AF22-8c	194	88	81	2.6	6.5	4.0	2.6
AF24-33c	187	88	91	3.1	3.8	2.4	1.0
AF25-18c	178	76	84	2.9	4.0	2.2	1.0
AF41-9c	202	94	78	2.8	6.5	3.0	1.5
AF42-10c	197	91	76	2.0	6.2	3.1	1.5
Abnaki	224	88	74	2.9	8.5	3.4	2.0
Wauseon	177	90	78	2.6	7.0	3.5	2.4
Katahdin	177	92	77	2.8	7.5	3.2	2.0
Norchip	201	84	88	2.5	4.0	2.1	1.0
Mean	200	88	81	2.8	6.6	3.0	1.9
LSD (.05)	47	6	4	0.5	1.0	0.7	0.5
(.01)	62	8	5	0.6	1.4	0.9	0.7
CV%	16	5	3	12	11	17	20

1/ 1.0 deleted
2/ 1 = poor to 5 = excellent
3/ PCII color scale
4/ 1 = mealy to 5 = soggy
5/ U.S.D.A. color standard; 1 = very light to 5 = dark brown

Campbell Table 5. Yield, specific gravity, tuber rating, chip color and french fry color and texture for selections to be evaluated for frozen products grown at Perham, Maine, 1975.

Selection	Yield over 2 inches cwt/A	Yield over 2 inches Percent	S.G.[1]	Tuber[2] Rating	Chip[3] Color	French Fry Texture[4]	French Fry Color[5]
BR6863-3	251	95	89	2.7	3.7	2.2	1.0
BR6863-5E	327	93	90	2.3	3.7	3.0	1.0
CC08-3	317	92	85	3.0	4.7	2.8	2.8
CD106-1	239	94	86	2.8	5.3	2.2	2.2
CD106-16	372	96	86	2.8	6.7	2.7	2.8
CD130-7R	267	91	87	3.0	5.0	2.3	1.7
CD138-3	210	94	72	2.5	9.3	3.5	3.8
CD139-9	256	91	88	3.5	4.3	2.2	1.3
CD141-26	245	90	92	3.2	6.3	2.5	2.7
AF198-1c	284	96	72	2.3	4.0	3.3	1.0
AF201-10c	314	91	78	3.5	5.0	2.7	2.0
AF204-5c	233	87	79	3.0	5.0	2.7	1.3
Wauseon	298	94	77	3.0	7.0	3.5	3.0
Kennebec	325	94	70	2.5	6.3	3.5	1.7
Norchip	281	94	82	2.7	4.3	2.5	1.5
R. Burbank	236	80	74	1.5	7.7	3.2	2.8
Mean	278	92	82	2.8	5.5	2.8	2.0
LSD (.05)	71	6	7	0.6	1.5	0.9	0.7
(.01)	95	8	9	0.8	2.1	N.S.	1.0
CV%	15	4	5	13	17	19	21

1/ 1.0 deleted
2/ 1 = poor to 5 = excellent
3/ PCII color scale
4/ 1 = mealy to 5 = soggy
5/ U.S.D.A. color standard; 1 = very light to 5 = dark brown

Campbell Table 6. Yield, specific gravity, tuber rating, chip color and french fry color and texture for selections in the chip test grown at Perham, Maine, 1975.

Selection	Yield over 2 inches cwt/A	Yield over 2 inches Percent	S.G.[1]	Tuber[2] Rating	Chip[3] Color	French Fry Texture[4]	French Fry Color[5]
BR7051-36	270	89	88	3.5	3.0	2.8	1.3
BR7086-30	210	92	78	3.0	3.3	2.8	1.3
BR7093-23	250	95	77	3.0	4.3	3.0	1.3
CC06-12	309	95	79	3.0	4.3	2.3	1.8
CC54-8	264	93	89	3.0	4.3	2.5	1.8
CD08-21	246	93	90	2.5	4.0	2.0	1.3
CD23-1	254	90	86	3.0	4.0	2.8	1.2
CD34-2	232	86	86	3.0	4.0	1.8	1.7
CD50-9	151	78	75	3.0	4.7	3.2	1.5
CD60-3	223	81	90	3.0	4.3	2.3	2.7
CD85-11	286	92	81	4.0	3.7	2.7	2.2
B6965-10	289	94	88	2.5	3.3	4.3	2.2
B6987-132	232	90	92	2.0	3.0	2.2	1.0
B6987-184	269	95	92	2.5	3.0	2.2	2.0
Wauseon	261	91	76	2.5	7.0	3.5	3.0
Kennebec	332	94	72	3.0	7.0	3.5	2.5
Norchip	295	91	86	2.5	3.3	2.5	2.2
Superior	325	96	81	3.0	5.0	2.7	2.0
Mean	261	91	84		4.2	2.7	1.8
LSD (.05)	67	6	5		1.0	0.8	0.7
m (.01)	90	8	6		1.3	1.1	0.9
CV%	15	4	3		14	18	22

1/ 1.0 deleted
2/ 1 = poor to 5 = excellent
3/ PCII color scale
4/ 1 = mealy to 5 = soggy
5/ U.S.D.A. color standard; 1 = very light to 5 = dark brown

Campbell Table 7. Yield, specific gravity, tuber rating, chip color and french fry color and texture for selections in the early to medium maturity trial grown at Perham, Maine, 1975.

Selection	Yield over 2 inches		S.G.[1]	Tuber[2] Rating	Chip[3] Color	French Fry	
	cwt/A	Percent				Texture[4]	Color[5]
BR7104-10	242	88	86	2.8	6.5	2.0	1.5
CA02-13	250	90	72	3.0	9.5	3.3	2.0
CA60-2	254	94	74	2.0	10.0	3.0	3.0
CC76-1	207	82	79	2.1	7.5	3.0	1.8
CD07-22	199	93	76	2.3	6.2	2.5	1.0
CD117-6R	190	85	82	2.8	5.5	2.8	2.0
CD131-14R	236	94	75	2.6	8.8	3.8	1.8
CD138-4R	284	93	76	3.1	7.8	2.8	2.8
CD138-11R	247	93	76	2.8	10.0	4.0	3.3
AF17-18c	239	92	77	1.5	6.0	3.3	1.5
AF22-11c	238	92	79	1.4	9.0	3.3	2.3
AF30-25c	247	89	83	1.9	8.5	1.8	2.5
Norgold R.	231	88	78	2.8	8.8	2.8	2.8
Norchip	241	88	86	2.2	5.5	1.8	1.3
Superior	254	98	85	1.9	6.8	2.8	1.5
Wauseon	248	93	77	1.9	8.2	2.3	2.0
Mean	238	91	79	2.3	7.8	2.8	2.0
LSD (.05)	42	5	3	0.7	1.0	0.9	0.9
(.01)	56	6	5	0.9	1.4	1.3	1.2
CV%	12	4	3	21	9	24	30

1/ 1.0 deleted
2/ 1 = poor to 5 = excellent
3/ PCII color scale
4/ 1 = mealy to 5 = soggy
5/ U.S.D.A. color standard; 1 = very light to 5 = dark brown

Campbell Table 8. Yield, specific gravity, tuber rating, chip color and french fry color and texture for selections in the late maturing trial grown at Perham, Maine, 1975.

Selection	Yield over 2 inches cwt/A	Yield over 2 inches Percent	S.G.[1]	Tuber[2] Rating	Chip[3] Color	French Fry Texture[4]	French Fry Color[5]
BR6626-5	261	95	76	2.8	7.8	3.1	3.4
BR6820-26	226	89	77	2.8	8.0	2.9	2.6
BR7085-1	204	88	89	2.6	6.0	2.4	1.9
BR7089-6	215	88	90	2.9	4.2	2.2	2.0
CC05-4	202	88	69	2.9	7.2	2.8	1.9
CC05-17	221	88	72	2.6	10.0	3.1	2.6
CD03-26	236	94	74	2.8	10.0	3.6	3.4
CD08-7	183	94	86	2.6	6.2	2.2	2.4
CD47-2	281	96	74	2.9	7.2	3.1	2.8
CD70-22	243	90	77	3.0	6.0	3.4	2.1
CD73-2	207	95	78	2.5	7.8	3.4	2.9
CD75-1	245	96	78	2.8	9.0	3.1	3.0
CD75-16	245	94	75	2.5	9.0	3.2	3.1
CD79-4	283	94	70	2.5	9.5	3.5	2.9
CD100-6R	204	92	75	3.8	8.2	3.5	3.1
CD100-9R	206	90	74	3.4	9.2	3.0	3.1
Wauseon	199	90	75	2.4	7.0	3.1	2.5
Katahdin	204	93	74	3.1	7.2	3.2	2.5
Norchip	213	84	86	2.4	4.0	2.1	1.4
Kennebec	212	89	73	2.6	6.2	2.9	1.9
Mean	225	91	77	2.8	7.5	3.0	2.6
LSD (.05)	35	4	3	0.5	0.9	0.6	0.6
(.01)	46	5	3	0.6	1.2	0.9	0.8
CV%	11	3	2	12	9	15	16

1/ 1.0 deleted
2/ 1 = poor to 5 = excellent
3/ PCII color scale
4/ 1 = mealy to 5 = soggy
5/ U.S.D.A. color standard; 1 = very light to 5 = dark brown

Campbell Table 8. Yield, specific gravity, tuber rating, chip color and french fry color and texture for selections in the late maturing trial grown at Perham, Maine, 1975.

Selection	Yield over 2 inches		S.G.[1]	Tuber[2] Rating	Chip[3] Color	French Fry	
	cwt/A	Percent				Texture[4]	Color[5]
BR6626-5	261	95	76	2.8	7.8	3.1	3.4
BR6820-26	226	89	77	2.8	8.0	2.9	2.6
BR7085-1	204	88	89	2.6	6.0	2.4	1.9
BR7089-6	215	88	90	2.9	4.2	2.2	2.0
CC05-4	202	88	69	2.9	7.2	2.8	1.9
CC05-17	221	88	72	2.6	10.0	3.1	2.6
CD03-26	236	94	74	2.8	10.0	3.6	3.4
CD08-7	183	94	86	2.6	6.2	2.2	2.4
CD47-2	281	96	74	2.9	7.2	3.1	2.8
CD70-22	243	90	77	3.0	6.0	3.4	2.1
CD73-2	207	95	78	2.5	7.8	3.4	2.9
CD75-1	245	96	78	2.8	9.0	3.1	3.0
CD75-16	245	94	75	2.5	9.0	3.2	3.1
CD79-4	283	94	70	2.5	9.5	3.5	2.9
CD100-6R	204	92	75	3.8	8.2	3.5	3.1
CD100-9R	206	90	74	3.4	9.2	3.0	3.1
Wauseon	199	90	75	2.4	7.0	3.1	2.5
Katahdin	204	93	74	3.1	7.2	3.2	2.5
Norchip	213	84	86	2.4	4.0	2.1	1.4
Kennebec	212	89	73	2.6	6.2	2.9	1.9
Mean	225	91	77	2.8	7.5	3.0	2.6
LSD (.05)	35	4	3	0.5	0.9	0.6	0.6
(.01)	46	5	3	0.6	1.2	0.9	0.8
CV%	11	3	2	12	9	15	16

1/ 1.0 deleted
2/ 1 = poor to 5 = excellent
3/ PCII color scale
4/ 1 = mealy to 5 = soggy
5/ U.S.D.A. color standard; 1 = very light to 5 = dark brown

New Jersey
Melvin R. Henninger

White Potato Variety Trials
1975

Location:	Rutgers Research & Development Center Bridgeton	Vegetable Res. Farm New Brunswick	Johnson Bros. Farm Deerfield
Table No.:	1	2, 3, 4, 5	6
Field Plot Design:	Single Plot	Rand. Block	Lattice Square
No. of Reps:	1	3	3
Plot Size:	(3' wide x 24' long, single row)		(6' wide x 12' long) double row
Soil Test:			
pH	5.0	6.0	5.0
P	V. High	V. High	V. High
K	Low	High	High
soil texture	Sandy Loam	Sandy Loam	Loam
Fertilizer:			
At planting $N-P_2O_5-K_2O$	150-50-200 lbs/A	100-100-100 lbs/A	120-120-60 lbs/A
N sidedress	75 lbs/A	60 lbs/A	50 lbs/A
Dates:			
Planted	4/16	4/16	4/18
Harvested	8/19	2-8/6, 3 & 4-8/20 5-9/3	8/20

Specific Gravity: Determine by the air and water method
Plant Type: 0=decumbent, 1=spreading poor canopy, 2=spreading med. canopy, 3-spreading good canopy, 4=erect poor canopy, 5=erect med. canopy, 6=erect good canopy
Plant Size: 0=v. small, 1=small, 2=med, 3=med. large, 4=large, 5=v. large
Plant Attractiveness: 0=v. poor, 1=poor, 2=fair, 3=good, 4=excellent
Air Pollution: 0=dead; 1, 2, 3, 4=decreasing appearance of plants with all leaves showing symp.; 5=most leaves with symp. but plant still appears good; 6, 7, 8=decreasing percent of foliar symp.; 9=no symp.
Maturity: 0=v. early, 1=early, 2=med. early, 3=med, 4=med. late, 5=late, 6=v. late
Tuber Color: 0=white, 1=buff, 2=tan, 3=net, 4=red, 8=russet
Tuber Set: 0=poor, 1=fair, 2=med, 3=good, 4=excellent
Tuber Size: 0=v. small, 1=small, 2=med. small, 3=med, 4=med. large, 5=large, 6=v. large
Tuber Shape: 0=round, 1=rd-flat, 2=oblong, 3=oblong-fl, 4=obl-rd, 5=long-flt, 6=long
Tuber Conformation: 0=poor, 1=fair, 2=med, 3=good, 4=excellent

New Jersey Table 1. Yield, Specific Gravity, Plant Type, Size, and Appearance, Air Pollution Tolerance, Early and Late, Maturity, Tuber Color, Set, Size, Shape and Conformation of 60 White Potato Seedlings and Two Varieties Grown in New Jersey, 1975.

Seedling	Yield over 1-7/8" cwt/A	Specific Gravity	Plant data			Air Pol.		Maturity	Tuber Data				
			type	size	attra.	early	late		color	set	size	shape	conf.
B6969-2	272	1.055	5	4	2	8	1	1	2	2	5	4	2
B6987-56	305	1.079	5	2	2	7	5	4	3	2	4	0	3
B7009-4	329	1.061	2	3	3	7	4	4	0	2	5	2	3
B7024-6	-	-	2	4	2	9	6	5	0	2	5	2	3
B7160-4	189	1.071	5	4	2	8	1	4	8	1	4	6	3
B7186-11	189	1.082	4	3	1	6	5	5	0	3	2	0	3
B7252-3	307	1.055	3	3	3	7	4	3	0	3	4	4	3
B7516-9	258	1.063	2	3	3	8	2	2	0	2	5	2	3
B7572-4	275	1.070	5	3	3	9	4	3	0	2	4	0	3
B7694-1	-	-	0	3	3	8	4	4	2	1	4	2	2
B7828-13	358	1.075	6	3	3	7	4	6	0	2	3	0	3
B7845-26	315	1.063	2	4	2	7	2	2	0	1	6	3	2
B7859-2	298	1.079	5	3	3	6	4	6	0	1	3	0	2
B7865-12	258	1.068	1	3	1	6	4	5	2	2	4	4	3
B7902-4	226	1.066	1	3	1	8	2	3	1	2	4	2	3
B7902-9	304	1.065	6	4	4	7	2	5	0	2	5	2	3
B8086-3	327	1.059	4	4	2	7	3	3	1	1	6	0	2
B8281-5	-	-	5	3	2	8	5	5	8	2	2	2	2
B8338-7	183	1.074	4	3	1	6	5	3	8	2	3	6	3
B8356-1	206	1.063	0	3	3	7	2	2	3	1	5	2	3
B8392-5	348	1.077	5	4	3	9	6	5	3	3	4	0	3
B8392-7	212	1.065	4	3	2	6	4	4	1	0	5	0	3
B8393-5	344	1.059	2	3	3	8	4	5	1	3	3	4	3
B8421-5	275	1.060	4	3	2	7	3	5	1	4	4	0	2
B8424-4	241	1.078	5	3	3	9	5	5	0	3	1	0	3
B8424-10	315	1.069	2	3	2	6	4	4	2	2	3	4	4
B8424-14	235	1.066	2	2	2	9	6	5	1	3	3	0	4
B8427-4	218	1.075	4	4	1	7	1	2	2	2	3	0	4
B8429-1	218	1.066	4	4	1	7	1	5	0	2	3	0	3
B8433-4	256	1.060	5	4	3	6	4	4	0	2	5	1	2
B8434-11	206	1.062	5	5	3	9	7	6	1	1	5	4	3
B8435-8	334	1.061	5	5	3	7	4	4	3	3	3	0	3
B8435-17	344	1.061	3	3	4	7	2	4	0	4	2	4	3
B8443-12	344	1.058	5	4	3	8	7	6	2	3	4	0	3
B8459-5	304	1.062	2	2	2	9	6	4	0	2	3	0	3

Seedling	Yield over 1-7/8" cwt/A	Specific Gravity	Plant data			Air Pol.		Maturity	Tuber Data				
			type	size	attra	early	late		color	set	size	shape	conf.
B8501-10	384	1.081	5	4	3	9	6	6	2	2	4	0	2
B8514-13	401	1.064	2	3	3	5	1	3	0	3	4	0	3
B8514-18	516	1.062	6	4	4	8	2	3	0	4	5	0	2
B8529-3	-	-	3	4	3	6	2	2	2	2	3	4	3
B8530-7	229	1.073	2	4	2	7	3	3	8	1	3	6	3
B8542-10	258	1.078	3	3	3	8	3	4	2	4	2	0	3
B8553-10	241	1.063	5	4	3	6	2	3	3	2	4	6	3
B8574-10	315	1.064	2	3	3	8	2	3	2	3	5	2	3
B8575-5	269	1.062	4	5	3	7	2	3	2	2	5	1	2
B8581-1	338	1.069	3	2	3	8	4	3	1	3	2	4	3
B8590-11	229	1.059	4	2	1	7	2	5	2	2	4	2	3
B8599-16	258	1.062	3	3	3	7	2	2	1	2	4	0	3
B8599-42	272	1.057	5	4	3	7	1	3	3	2	3	2	2
B8615-7	223	1.062	5	2	2	7	2	1	2	1	3	2	4
BR6863-3	186	1.082	0	1	2	9	3	3	1	1	3	0	2
BR7093-23	285	1.062	5	4	3	7	4	5	0	4	2	0	3
BR7104-10	-	-	2	3	2	7	4	3	0	2	3	0	1
CA46-11	318	1.083	2	2	2	8	4	5	0	3	5	2	4
CA61-3	341	1.078	5	4	2	8	4	4	0	2	2	0	3
CC08-3	401	1.073	3	5	4	9	4	3	2	3	2	0	4
CA55-24	-	-	2	3	3	8	4	5	0	3	5	4	2
CD07-22	206	1.061	6	3	3	8	1	2	3	1	2	0	3
CD12-18	355	1.061	3	2	3	9	2	3	1	4	2	0	3
CD106-11	246	1.074	5	2	2	8	1	4	2	3	4	2	3
CD117-6R	416	1.063	2	4	3	8	4	4	0	4	3	6	2
Superior	248	1.063	5	3	3	8	4	3	3	3	3	4	2
Katahdin	210	1.065	5	2	3	8	4	5	0	2	3	0	3

New Jersey Table 2. Yields, Specific Gravity, Tuber Sizes, Air Pollution Tolerance, Maturity, and Tuber Color, Shape, and Conformation for 11 Seedlings and Five Varieties of White Potatoes Harvested Early and Grown in New Brunswick, New Jersey, 1975.

Variety	Yield Over 1-7/8" Cwt/A	Yield Over 1-7/8" Mt/ha	Specific Gravity	Percentage of Yield Below 1-7/8"	1-7/8" to 2-1/2"	2-1/2" to 3-1/4"	3-1/4" to 4"	Air Poll.	Maturity	Tuber Color	Tuber Shape	Tuber Conf.
B-6987-56	373	41.7	1.079	8	40	35	17	4+	4	2	0	2-
B-7862-4	359	40.1	1.062	8	58	31	2	6-	3-	0	3+	2+
CA-61-3	341	38.2	1.073	8	46	36	10	4-	4+	1-	0	4-
B-7865-12	338	37.9	1.061	8	49	37	6	5-	3+	0	0	3+
Katahdin	292	32.7	1.052	12	61	25	2	5-	5+	0	0	2+
Superior	285	32.0	1.062	6	48	36	10	6+	4-	1+	4	2
BR-6863-5E	282	31.6	1.067	9	49	34	8	2+	2+	1	0	2-
B-6969-2	273	30.6	1.058	6	34	47	13	2-	2+	1	4	2+
Norchip	255	28.5	1.065	6	46	42	5	5-	3-	0	0	2
Penn 71	245	27.4	1.063	13	60	25	2	5+	4-	0	3	2-
B-6986-2	237	26.6	1.054	6	30	39	25	4+	5	1+	0	1+
Norland	233	26.1	1.050	7	58	28	7	1+	3-	2+	4	3-
CC-76-1	222	24.8	1.069	21	67	12	0	2-	5-	0	3	1+
B-7902-4	214	24.0	1.055	17	51	28	3	5+	6-	0	4	2
BR-6863-3	214	23.9	1.070	11	33	40	15	4-	3+	1-	0	3-
B-7845-23	186	20.8	1.061	11	57	19	12	5-	4	0	2	2-
LSD 5%	46	5.1	.004	3	11	7	10					
Coef. of Variability	10	10	4	20	13	72						

New Jersey Table 3. Yields, Specific Gravity, Tuber Sizes, Air Pollution Tolerance, Maturity, and Tuber Color, Shape, and Conformation for 18 Seedlings and Seven Varieties of White Potatoes Harvested Mid-Season and Grown in New Brunswick, New Jersey, 1975.

Variety	Yield Over 1-7/8" Cwt/A	Yield Over 1-7/8" Mt/ha	Specific Gravity	Percentage of Yield Below 1-7/8"	1-7/8" to 2-1/2"	2-1/2" to 3-1/4"	3-1/4" to 4"	Air Poll.	Maturity	Tuber Color	Tuber Shape	Tuber Conf.
CA61-3	484	54.2	1.075	6	38	45	10	6+	4+	0	0	2-
B-7009-4	459	51.3	1.066	7	35	42	16	5-	4-	0	4	3-
B-6986-2	453	50.7	1.064	3	15	36	43	5+	2+	0	4	1-
BR-7104-10	420	41.1	1.065	11	46	40	3	4	3	0	0	2+
B-6987-56	420	47.0	1.081	5	25	39	31	5+	4-	3-	0	3+
BR-7103-7	397	44.5	1.071	2	16	42	39	6+	3	0	4	2+
B-7680-3	387	43.3	1.060	10	51	34	5	7	4	0	6	1+
B-6987-29	384	43.0	1.071	2	19	43	34	6-	4	0	4	1-
Kennebec	373	41.8	1.077	12	55	32	2	6	6-	0	2	1+
B-7694-1	356	39.9	1.068	6	42	44	8	5-	3-	0+	2	2+
Hudson	355	39.8	1.070	4	20	37	39	6+	6	0	0	2-
BR-6863-3	353	39.6	1.080	3	20	42	35	5-	3+	1	0	3-
B-6987-43	352	39.4	1.066	2	14	28	55	4	3+	0	0	1+
Penn 71	351	39.2	1.067	6	50	40	4	5	5-	0	3	1+
Superior	344	38.6	1.064	6	45	43	6	6+	4	3	2	2+
B-7783-8	344	38.4	1.080	4	26	53	17	5-	3-	2+	4	1+
BR-7051-3	344	38.4	1.082	5	22	36	34	3+	5-	0	0	1+
B-6951-1	335	37.6	1.060	5	31	46	18	3-	2	3	4	2+
BR-7085-1	335	37.6	1.077	6	43	42	9	4+	3+	2+	2	2+
Katahdin	331	37.0	1.058	10	60	26	3	5-	5	0	4	3-
R. Burbank	301	33.7	1.065	26	62	12	1	6+	6-	8	6	1-
CA-55-24	301	33.6	1.075	7	47	40	6	4	4-	0+	2	3
CA-46-11	292	32.7	1.066	6	41	48	5	5+	4+	1-	2	2+
CC-76-1	291	32.6	1.070	14	62	23	1	2+	2+	0	2	2
Norchip	258	28.9	1.068	8	47	41	4	3	3-	0	0	2
LSD 5%	47	5.3	.007	2	7	7	7					
Coef. of Variability	9	9	8	23	13	12	30					

New Jersey Table 4. Yields, Specific Gravity, Tuber Sizes, Air Pollution Tolerance, Maturity, and Tuber Color, Shape, and Conformation for 18 Seedlings and Six Varieties of White Potatoes Harvested Mid-Season and Grown in New Brunswick, New Jersey, 1975.

Variety	Yield Over 1-7/8" Cwt/A	Yield Over 1-7/8" Mt/ha	Specific Gravity	Percentage of Yield Below 1-7/8"	1-7/8" to 2-1/2"	2-1/2" to 3-1/4"	3-1/4" to 4"	Air Poll.	Maturity	Tuber Color	Tuber Shape	Tuber Conf.
BR-7104-10	404	45.2	1.062	13	52	32	3	4-	2+	0	0	2+
AF-41-2	402	45.0	1.064	7	44	41	8	4-	4-	2	0	2+
B-6987-56	381	42.6	1.081	6	38	43	12	5	3+	3	0	3+
BR-7088-18	378	42.4	1.074	7	46	44	3	5+	5	0+	0	3
Superior	376	42.1	1.061	4	45	42	8	5+	2+	2	2	2
BR-6863-3	368	41.2	1.076	5	34	49	12	5	3+	2	0	3+
BR-7090-17	331	37.1	1.061	18	60	20	1	5+	4+	0	0	2+
F-6208	329	36.9	1.068	6	37	39	18	8	6	0	0	3
Cobbler	325	36.3	1.064	9	48	41	2	4	2	0	0	1+
Katahdin	316	35.4	1.053	10	59	30	1	5+	6-	0	0	2+
BR-6626-5	315	35.3	1.062	9	56	31	4	4-	3	2+	0	3-
BR-7089-6	299	33.5	1.073	13	49	35	2	4+	2+	0	2	2-
BR-7093-23	289	32.4	1.059	9	53	37	1	7	4	0	0	2
Norland	275	30.8	1.050	11	71	18	1	1+	1	4	0	2
BR-7093-42	271	30.4	1.056	8	42	38	12	4+	3+	1+	0	3-
B-7008-3	268	30.1	1.069	4	27	44	23	6-	3+	2	0	1+
Cascade	267	29.8	1.062	9	45	44	3	5+	4-	0	2	1+
Hudson	262	29.4	1.066	5	28	42	25	7	6	0	0	3-
B-7033-33	252	28.3	1.069	6	29	49	14	6	3	0	1	2
BR7093-5	248	27.7	1.060	6	45	43	6	5+	4-	0	0	3+
B-7167-2	241	27.0	1.072	11	51	36	2	7-	2+	1	0	3-
CD-137-5R	238	26.7	1.074	5	48	44	3	7	5	2	4	3-
BR-7093-20	178	20.0	1.071	5	33	44	18	4+	2+	0	0	2+
BR-6864-9	137	15.3	1.057	14	64	22	0	1	1-	1	0	3+
LSD 5%	61	6.9	.004	3	10	9	6					
Coef. of Variability	12	12	4	22	13	14	45					

New Jersey Table 5. Yields, Specific Gravity, Tuber Sizes, Air Pollution Tolerance, Maturity, and Tuber Color, Shape, and Conformation of 18 Seedlings and Six Varieties Harvested late and Grown in New Brunswick, New Jersey, 1975.

Variety	Yield over 1-7/8" Cwt/A	Yield over 1-7/8" Mt/ha	Specific Gravity	Percentages of Yield: Below 1-7/8"	1-7/8" to 2-1/2"	2-1/2" to 3-1/4"	3-1/4" to 4"	Air Poll.	Maturity	Tuber: Color	Tuber: Shape	Tuber: Conf.
B7139-4	378	42.3	1.075	2	25	49	24	5+	3+	0	4	1
B7152-1	317	35.6	1.059	7	35	43	16	4-	3	0	0	2+
B7602-1	287	32.3	1.072	4	37	40	19	5	4+	0	0	2
Rus. Burbank	263	29.5	1.062	27	63	10	0	7-	5+	8	6	0
B6951-5	261	29.3	1.059	6	32	44	18	2+	1+	0	0	3-
BR7085-1	260	29.1	1.076	7	53	37	3	4-	3+	1	2	2
BR7051-3	258	29.0	1.079	3	24	40	33	4	4+	1+	0	1
B7252-3	252	28.3	1.062	11	46	36	7	3-	3+	0	0	3
Green Mount.	245	27.5	1.069	12	53	34	1	6	4+	0	2	1
CC06-5	243	27.2	1.067	7	53	34	5	4	4+	2-	0	2+
Katahdin	241	27.0	1.060	9	53	34	5	4+	5-	0	0	2+
B7572-4	236	26.5	1.080	7	46	41	6	5+	3+	1	0	2+
BR7089-6	233	26.2	1.069	10	65	21	4	2+	5-	2	2	2-
B6987-56	226	25.4	1.076	7	41	38	13	4+	3+	3	0	3-
B8185-4	224	25.1	1.059	12	73	15	0	2+	3	2	6	0+
B8392-5	192	21.6	1.065	5	38	35	22	6-	5	2	0	3-
Kennebec	180	20.2	1.062	17	48	33	2	5	4	0	1	1
CA53-6	170	19.0	1.061	12	48	36	4	4+	4	1-	0	2
Hudson	159	17.8	1.065	8	30	45	16	5+	5	0	0	2
CA23-6	150	16.8	1.059	13	42	27	17	2+	3+	2-	0	2+
BR6863-3	138	15.5	1.077	6	35	38	19	5-	3+	1	0	2+
Superior	121	13.5	1.060	5	48	42	5	5-	3-	2+	2	2
BR7093-23	105	11.8	1.065	8	52	40	0	4-	4+	0	0	3
B8086-3	105	11.8	1.059	10	47	32	10	5-	5-	2-	0	3
LSD 5%	48	5.4	.004	3	6	8	6					
Coef. of Variability	13	13	4	17	8	13	31					

New Jersey Table 6. Yields, Specific Gravity, Tuber Sizes, Air Pollution Tolerance, Maturity, Tuber Color, Shape, and Conformation for 17 Seedlings and Eight Varieties of White Potatoes Harvested Mid-Season and Grown in Cumberland County, New Jersey, 1975.

Variety	Yield Over 1-7/8" Cwt/A	Yield Over 1-7/8" Mt/ha	Specific Gravity	Percentage of Yield Below 1-7/8"	1-7/8" to 2-1/2"	2-1/2" to 3-1/4"	3-1/4" to 4"	Air Poll.	Maturity	Tuber Color	Tuber Shape	Tuber Conf.
B7802-2	442	49.5	1.059	3	14	37	44	4	3	0	0	2-
B6987-56	406	45.5	1.076	2	28	38	31	6	4-	3-	0	3+
B6987-43	390	43.7	1.067	3	16	31	45	5	5	2	0	2
Kennebec	376	42.1	1.063	5	39	42	14	6+	6	0	2	2+
Penn 71	340	38.2	1.063	4	31	42	24	6-	5+	0	1	1
BR6863-3	338	37.9	1.065	2	20	45	33	5	4-	2-	0	3+
B6986-2	333	37.3	1.060	3	19	36	42	6	4+	0	0	2+
B7151-4	328	36.6	1.071	8	40	42	10	6	4+	0	0	3
B7610-1	327	36.7	1.067	7	38	40	15	7	6+	3	2	2
Hudson	324	36.3	1.064	4	21	42	31	7	6	0	0	2
B6955-35	316	35.5	1.069	8	41	40	12	3+	3+	0	0	2-
B6951-1	310	34.7	1.058	2	23	43	32	3-	3-	2	4	3-
Chippewa	300	33.5	1.058	7	26	38	28	6-	5-	0	0	1
BR7051-3	295	33.0	1.077	4	21	39	36	3+	4+	2	0	2-
Katahdin	292	33.0	1.050	8	42	40	10	6+	5+	0	0	3-
Norchip	271	30.4	1.062	7	47	37	9	3+	3-	0	0	3-
B7845-23	265	29.8	1.066	7	39	40	14	2-	3-	0	2	2-
Superior	262	29.4	1.061	3	22	49	25	6+	4-	3	4	3
B6987-29	258	28.9	1.069	3	22	37	38	4-	4+	1	0	2-
B7164-25	239	26.7	1.069	4	30	55	11	4+	3-	1	0	3-
B7160-4	238	26.6	1.058	10	48	39	3	4+	3+	8	6	2-
R. Burbank	220	24.6	1.066	19	59	18	4	7+	6+	8	6	1-
B6969-2	208	23.4	1.055	4	21	43	31	4+	2-	0	0	3+
B6955-33	207	23.2	1.073	4	28	46	22	6-	3+	2	0	3+
B7608-2	205	23.0	1.055	9	52	31	7	3+	0	8	6-	2
LSD 5%	71	8.0	.006	3	9	11	10					
Coef. of Variability	15	15	--	30	18	16	28					

NEW YORK (LONG ISLAND)

R. C. Cetas

Evaluation of Potato Cultivars and Breeding Lines for Scab Resistance on Long Island in 1975

Fifty-seven cultivars and breeding lines were evaluated for scab resistance at the Long Island Vegetable Research Farm in 1975. The soil was naturally infested with Streptomyces scabies. The pH of the Haven loam (formerly Sassafras sandy silt loam) soil varied from 5.2 to 5.6 when determined in water and from 4.9 to 5.3 when determined in 0.01N $CaCl_2$ on October 10, 1974. Lime (1000 lb/A) was applied and incorporated with the soil with a disk harrow after the field was plowed on April 9, 1975.

The Dithane M-45 (8% active dust) treated seedpieces were hand planted in 10-hill plots on April 9. Each plot was paired with one of the Chippewa cultivar, which was planted by machine. The hand planted seedpieces were spaced 12 inches apart in the row and the machine planted ones nine inches apart. All rows were 34 inches apart. The 8-16-8 fertilizer (2250 lb/A) and Temik 15G (20 lb/A in the seed furrow) were applied as the rows were marked with the two-row potato planter. Foliar sprays were applied as needed for insect and disease control. Approximately one inch of water was applied by overhead sprinkler irrigation on July 9 and on August 6 to supplement rainfall. The plants were roto-cut on September 2 and the tubers were harvested on September 18.

Forty tubers, or all tubers if less than 40 were available, from each plot were washed and examined for scab lesions. Each tuber was scored 0 (no lesions) to 4 (deep pits) for type of scab present and 0 (no scab) to 5 (61% or more) for surface area covered by scab lesions. These values were converted to individual tuber indices that ranged from 0 (no scab) to 140 (61% or more of the surface area covered by deep pitted scab). The scab index for each plot was calculated by dividing the sum of the individual tuber indices by the number of tubers examined. The index for each cultivar and breeding line in the replicated trial was determined by calculating the average of the two plots. A scab index ratio was calculated for each cultivar and breeding line by dividing the cultivar or breeding line index by the average index of their respectively paired Chippewa plots and multiplying the quotient by 100. The ratios allow one to determine quickly which cultivars or breeding lines were more or less resistant to scab than Chippewa and to compare one cultivar or breeding line with another.

The scab index ratio for Abnaki was low (less than 7.6) in three of the six years between 1970 and 1975. In the other three years, the scab index ratios indicated that Abnaki was only slightly more resistant to scab than Katahdin. Similar results have been obtained with Cascade, Nooksack, and Reliance in the two or more years that they have been included in the test. In contrast, the scab index ratio for Nampa, Norchip, Norgold Russet, Superior, Targee and Wauseon has been low for each of the two or more years they have been tested. Breeding lines that appeared to have a high degree of scab resistance in the 1975 trial included M348-45, M351-17, B7918-13 and B8123-3.

New York (Long Island) Table 1. Results of growing cultivars and breeding lines of potatoes in soils that were infested with Streptomyces scabies at Riverhead, New York in 1975.

Cultivar or breeding line	Scab index			Type of scab on affected tubers				Percentage of tubers with scab	
				Majority of lesions		Average lesions			
	Line	Chippewa	Ratio[1/]	Line	Chippewa	Line	Chippewa	Line	Chippewa
10-hill Nonreplicated, 40 tubers									
Bake King	66.2	64.3	103.0	4	4	3.7	3.9	97.5	100.0
Belleisle	10.6	29.8	35.6	2 - 4	3 - 4	2.7	3.8	82.5	95.0
Wisechip 623	4.6	46.4	9.9	2 - 3	4	2.5	3.8	72.5	97.5
N61-11	6.7	21.8	30.7	2 - 3	3 - 4	2.6	3.6	85.0	100.0
N61-25	13.6	56.5	24.1	3 - 4	4	3.2	3.9	75.0	100.0
N65-6	29.2	21.6	135.2	3 - 4	3 - 4	3.8	3.6	95.0	85.0
N85-4	12.4	46.4	26.7	2	4	2.0	3.8	100.0	97.5
N572-134	6.5	31.1	20.9	2 - 3	3 - 4	2.3	3.6	75.0	97.5
N572-271	6.6	17.2	38.4	2 - 3	3 - 4	2.4	3.2	85.0	85.0
N576-5	17.6	16.7	105.4	3 - 4	3 - 4	3.1	3.3	92.5	77.5
N582-64	6.0	25.1	23.9	2 - 3	3 - 4	2.2	3.3	77.5	95.0
10-hill 2 replications, 80 tubers									
Abnaki	1.5	40.8	3.7	2	3 - 4	2.1	3.7	35.0	96.2
Cascade	1.0	31.0	3.2	2	3 - 4	2.0	3.6	33.8	97.5
Hudson	26.3	38.7	68.0	3 - 4	3 - 4	3.1	3.7	95.0	100.0
Hudson	28.4	34.3	82.8	3 - 4	3 - 4	3.2	3.6	98.8	95.0
Katahdin	17.5	31.5	55.6	2 - 4	3 - 4	2.7	3.5	93.8	96.2
Katahdin	12.5	24.0	52.1	2 - 4	3 - 4	2.8	3.6	93.8	97.5
Nampa	0.0	35.9	0.0	0	3 - 4	0	3.8	0.0	98.8
Nooksack	0.0	34.8	0.0	0	3 - 4	0	3.7	0.0	98.8
Norgold Russet	0.1	42.1	0.2	2	3 - 4	2.0	3.7	3.8	98.8
Peconic	13.8	38.6	35.8	2 - 4	3 - 4	2.7	3.8	80.8	97.8
Penn 71	21.0	50.2	41.8	3 - 4	3 - 4	3.0	3.8	96.2	98.8
Superior	0.1	46.0	0.2	2	3 - 4	2.0	3.7	3.8	93.8
Reliance	2.5	58.9	4.2	2	3 - 4	2.1	3.8	55.0	97.5
Targee	0.0	28.4	0.0	0	3 - 4	0.0	3.6	0.0	97.5
Wauseon	0.2	46.3	0.4	2	3 - 4	2.0	3.8	8.8	100.0
NY-57	97.4	48.6	200.4	4	3 - 4	4.0	3.6	100.0	95.0

(New York (Long Island) Table 1 continued on next page)

New York (Long Island) Table 1. Continued.

Cultivar or breeding line	Scab index			Type of scab on affected tubers				Percentage of tubers with scab	
				Majority of lesions		Average lesions			
	Line	Chippewa	Ratio 1/	Line	Chippewa	Line	Chippewa	Line	Chippewa
K37-1	2.2	36.4	6.0	2	3 - 4	2.0	3.6	71.2	97.5
K349-7	17.5	38.4	45.6	2 - 3	3 - 4	2.4	3.6	95.0	98.8
L521-5	11.6	21.0	52.2	3 - 4	3 - 4	2.9	3.2	96.2	96.2
L521-7	23.6	47.6	49.5	3 - 4	3 - 4	3.4	3.7	98.8	98.8
M11-41	24.0	51.5	46.6	2 - 3	3 - 4	2.4	3.7	95.0	98.8
M99-7	10.9	49.1	22.2	2 - 3	3 - 4	2.5	3.7	97.5	100.0
M146-3	4.0	34.4	11.6	2 - 3	3 - 4	1.6	3.6	72.5	96.2
M222-5	70.0	35.6	196.6	4	3 - 4	3.9	3.7	100.0	96.2
M297-31	2.7	32.1	8.4	2	3 - 4	2.2	3.6	60.0	92.5
M348-45	0.1	31.4	0.3	2	3 - 4	2.0	3.6	3.8	97.8
M351-17	0.8	43.1	1.9	2	3 - 4	2.0	3.8	21.2	97.8
N571-10	40.6	52.7	77.0	3 - 4	3 - 4	3.5	3.7	100.0	100.0
B6595-5	2.9	27.3	10.6	2 - 3	3 - 4	2.1	3.6	77.5	95.0
B6987-29	4.0	58.6	6.8	2 - 3	3 - 4	2.4	3.8	53.8	97.5
B6987-56	2.5	26.8	9.3	2 - 3	3 - 4	2.4	3.6	46.2	93.8
B7832-2	8.8	41.0	21.5	2 - 3	3 - 4	2.5	3.9	77.5	98.8
B7845-4	6.8	24.7	27.5	2	3 - 4	2.1	3.6	81.2	90.0
B7845-10	10.4	21.4	48.6	2 - 3	3 - 4	2.2	3.6	90.0	91.2
B7845-19	3.6	37.3	9.6	2	3 - 4	2.0	3.8	88.8	77.0
B7848-2	7.6	41.4	18.4	2 - 4	3 - 4	2.4	3.7	85.0	98.8
B7849-5	4.3	29.8	14.4	2	3 - 4	2.0	3.6	84.7	98.8
B7863-2	1.4	41.0	3.4	2 - 3	3 - 4	2.3	3.7	31.2	97.5
B7866-3	9.8	29.0	33.8	2 - 3	3 - 4	2.4	3.7	96.2	96.2
B7888-8	14.4	44.8	32.1	2 - 3	3 - 4	2.4	3.8	92.5	97.5
B7897-1	4.7	45.2	10.4	2 - 3	3 - 4	2.4	3.6	58.8	96.2
B7905-2	28.3	42.2	67.1	3 - 4	3 - 4	3.4	3.7	95.0	93.8
B7918-3	0.1	56.0	0.2	2	3 - 4	2.0	3.9	3.8	43.8
B7957-5	3.1	28.6	10.8	2 - 3	3 - 4	2.4	3.7	43.8	98.8
B8018-2	1.6	31.4	5.1	2 - 3	3 - 4	2.2	3.7	33.8	97.5
B8123-3	0.4	33.8	1.2	2	3 - 4	2.0	3.7	16.2	97.5
B8125-5	3.9	23.8	16.4	2 - 3	3 - 4	2.2	3.4	70.0	97.5
B8148-4	20.6	51.3	40.2	2 - 3	3 - 4	2.5	3.7	100.0	100.0

1/ Ratio = Index for cultivar or breeding line divided by index for paired Chippewa plots multiplied by 100.

NEW YORK

R.L. Plaisted and H.D. Thurston[1]

The N.Y. breeding program in 1975 was concerned with (1) selection and maintenance of tuberosum clones, (2) production of seedling tubers of the third cycle andigena population, (3) selection of seedling hills of the sixth cycle andigena population, and (4) evaluation of disease and insect resistance, cooking and chipping quality.

The major component of the tuberosum selection program was 3700 clones grown as first year unreplicated observation plots. From these, 902 were selected. To date 154 have been discarded for poor after cooking darkening and another 350 are expected to be discarded due to susceptibility to the golden nematode. The number in seedling hills was down to 12,000 due to the andigena program. Of these, 544 were selected. Only 13 clones in the third stage of selection were saved for further testing (Table 1), however, not all of these will be kept for planting. None of the clones in the fourth stage appear promising, so this data is not presented. Among the advanced clones (Table 2) the most interesting are K349-7, L521-7, M11-41, and M297-31. K349-7 is satisfactory in yield, appearance, and reaction to scab and is desirable because of golden nematode resistance, possible leafroll resistance and ability to chip from 50° storage. It's shortcomings are low specific gravity, poor after cooking darkening, tendency to go oversize with hollow heart and growth cracks, and susceptibility to Verticillium wilt. L521-7 has been outstanding in yield, freedom from after cooking darkening, Verticillium wilt resistance, field resistance to late blight and golden nematode resistance. It is satisfactory in appearance, specific gravity, hollow heart, and scab and leaf rool resistance. It will not chip, but its greatest shortcoming is internal necrosis which is serious only in the Riverhead trials. M11-41 is a hybrid between Wauseon and an andigena clone. It yields a large crop of small tubers with good shape and somewhat deep eyes with a pink spectacle. It is resistant to the golden nematode, fairly resistant to Verticillium wilt, acceptable resistance to scab, and good for alter cooking darkening. So far it shows promise of chipping after 50° storage. M297-31 has fewer years of testing, but looks promising for its resistance to the golden nematode and scab, good yield and appearance, edceptional specific gravity, freedom from internal defects and potential for chipping from 50° storage. This is also a cross involving Wauseon.

The 12,700 seedling tubers produced of the third cycle andigena represent 426 of the original 1249 accessions. An additional 8300 seedling tubers were produced of the 5th cycle population parentw which chipped well out of 40° and 50° storage. From 24,000 hills of the sixth cycle population of andigena, 1183 were selected in the field. Further selection has reduced this to 921. These are being tested for resistance to PVX and late blight which will further reduce the numbers before spring planting. To date, these two populations have been shown to have clones which can contribute resistance to late blight, scab, Verticillium wilt, PVX, PVY, wart, aphids, leaf hoppers, rootknot nematodes, and the golden nematode. There appears to be no resistance to the Colorado Potato Beetle. Screening for resistance to PLRV has been handicapped by difficulty in diagnosing the symptoms in many of the vine types.

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[1] In cooperation with Anderson, Brodie, Cetas, Ewing, Jones, Sieczka, Semel, and Tingey.

New York (Breeding Program) Table 1. Selected clones from first stage yield trial - 1975.

	Yield in cwt/A			%	Appear-[1]	Hollow[2]	Internal[3]	Specific[4]					1974[9]
	Total	1-7/8	2-1/4	2-1/4	ance	heart	necrosis	Gravity	GN[5]	VW[6]	Scab[7]	ACD[8]	Chip
Katahdin	290	276	231	80	4.2	1/168	0	1.078	+	5.5	54	$0^4 1^4$	50?
P2-5	325	311	273	84	3.3	0	0	1.082	-	3.0	13	$0^5 1^2 2^1$	50
P2-8	299	289	270	90	3.3	2/24	0	1.076	-	2.0	26	$0^4 1^2$	no
	occasional growth cracks, large tubers, weak skin												
P-2-25	338	322	242	72	4.3	1/24	4/24	1.086	+	6.5	7	$0^7 1^1$	40/50
	occasional growth crack												
P6-1	287	276	236	80	4.0	0	0	1.080	-	5.0	18	0^8	50?
	occasional growth crack in 2 reps., very large tubers												
P6-3	286	271	229	80	3.3	0	0	1.079	-	6.0	70	0^8	no
	occasional growth crack, blocky shape												
P6-15	272	254	214	79	4.0	0	1/24	1.073	-	6.0	14	0^4	no
	russet skin												
P19-19	281	265	218	77	5.0	0	0	1.084	+	7	67	$0^1 1^4 2^3$	50
	small tubers, very white skin												
P27-1	298	283	232	78	5.0	0	0	1.084	±	5.5	43	$0^3 1^1$	no
	oblong shape												
P31-5	330	341	303	92	4.7	0	0	1.077	-	4.0	63	0^4	no
	oblong shape												
P54-5	one repl.				5.0	0	3/8	1.082	-	5	98	$0^5 1^3$	40/50
P54-24	one repl.				3.5	0	0	1.087	-	6.0	154	$0^3 1^4 2^1$	40/50
	few growth cracks, greening, occasional knob												
P54-42	323	312	285	88	4.0	0	0	1.084	-	7	90	$0^1 1^3$	
	occasional growth cracks												
P54-48	277	267	243	88	4.0	2/24	0	1.082	-	5.0	192	$0^3 1^5$	no
	blocky shape												no

1. 0 is very rough; 5 is very attractive.
2. Hollow heart in oversiae tubers.
3. Internal necrosis
4. Specific Gravity - Aug. 1974, 1975.
5. Golden nematode (race A):- = resistant.
6. Verticillium wilt: 2 is resistant; 6 is suscep.
7. Scab index: 15 is resistant.
8. Aftercooking darkening scores for 1974 & 1975. 0 is white, 1 is gray, 2 is dark.
9. Chip potential based on 1974 results. 40 or 50 refer to stor. temp.

New York (Breeding Program) Table 2. Advanced stage yield trials -- 1975.

		1975 Yield in cwt/A			%	Yield[1]	% 2 1/4[2]	[3] Appear. [4]		Specific[5]	[6]	Int.[7]	[8]
		Total	1 7/8	2 1/4	2 1/4	index	index	1975	Avg.	Gravity	Hht.	necr.	Growth cracks
Katahdin	Ith	428	406	381	89			4.5	4.7(5)	1.078	20/244	0/244	
	Riv	349	327	199	57			3.9	4.2(4)		4/176	2/176	
	Cato	444	431	382	86			4.4	4.2(3)		12/156	0/156	0^2
NY-57	Ith	389	362	313	80	1.00(6)	.94	3.8	3.6(5)	+.005	3/126	0/126	
	Riv	448	416	275	49	1.13(4)	.95	4.7	4.3(4)		1/78	0/78	
	Cato	492	462	393	80	1.19(3)	1.02	3.7	3.9(3)		0/60	0/60	
K37-1	Ith	450	424	314	70	1.14(4)	.93	3.5	3.7(5)	+.003	6/94	7/94	0^3m^2
	Riv	393	371	223	57	.94(4)	.77	3.3	3.8(4)		2/82	0/82	0^2f^2
	Cato	465	435	365	78	1.12(3)	.93	3.7	3.9(3)		5/76	0/76	$0,f,s^2$
K349-7	Ith-6	436	411	388	89	.97(4)	1.02	4.2	4.0(5)	-.005	6/118	2/118	0^2,f,m
	Riv-6	394	384	305	77	1.12(3)	1.26	4.5	4.6(3)		4/54	0/54	
	Cato-6	443	430	393	89	1.03(2)	1.11	4.3	4.2(2)		4/64	0/64	0^2,f
	Cato-9	418	404	376	90			4.5					0^2,f
L521-5	Ith	443	409	366	83	1.14(4)	.96	3.0	3.4	+.010	2/71	1/71	f
	Riv	482	468	344	71	1.35(3)	1.02	3.3	3.5		9/66	3/66	
	Cato	506	481	416	82	1.18(3)	.96	4.3	4.3		4/48	0/48	
L521-7	Ith-6	485	453	411	85	1.13(4)	1.00	3.3	4.0(4)	+.006	7/90	1/140	
	Riv-6	517	499	388	75	1.38(3)	1.16	5.0	4.4(3)		7/96	49/96	0^2
	Cato-6	549	515	474	86	1.34(3)	1.09	4.8	4.4(3)		3/56	2/56	
M11-41	Ith	461	407	351	76	1.10(3)	.84	3.6	3.9(3)	+.001	5/49	0/49	
	Riv	420	375	216	51	1.22(2)	.87	4.0	3.7(2)		1/38	3/38	
	Cato	one repl.				1.55(1)	.92	4.0	4.0(2)		0/13	0/13	
M99-7	Ith	408	393	362	89	1.04(3)	.96	3.0	3.5(3)	+.002	1/54	0/54	
	Riv	397	374	254	64	1.03(2)	1.06	3.5	3.7(2)		1/38	1/38	
	Cato	485	471	411	85	1.10(2)	.95	4.0	3.9(2)		0/28	0/28	
M99-9	Ith	444	419	334	75	1.01(3)	.92	3.0	3.3(3)	-.002	1/54	0/54	
	Riv	358	347	235	66	1.03(2)	1.08	3.6	3.7(2)		2/38	0/38	
	Cato	one repl.				.93(1)	.96	2.0	2.8(2)		0/28	0/28	

Continuation of Table 2.

		GN[9]	VW[10]	Scab[11]	Chip[12]	LR[13]	ACD			
							0	1	2[14]	
Katahdin	Ith	+		54	50?	29/140	30	80	30	occ 2nd gr., small[3], occ k
NY-57	Ith	-*	Res(3)	200	No	54/140	23	29	12	small
K37-1	Ith	-	=Kat	6	No	47/140	17	37	6	all small, occ k[2], many 2nd gr.
	Riv									occ K[3]
	Cato									white[5], occ K, few K
K349-7	Ith	-	Susc	46	50	0/40	4	23	24	occ K
	Riv-6									lg[2], deep eye
	Cato-6									all lg[2]
	Cato-9									
L521-5	Ith	-	Res(3)	52	No	11/100	22	4	0	2nd growth[3], deep stem end[3],
										all small, irreg.
	Cato									scurfy skin, deep eye, V. lg.
L521-7	Ith-6	-	Res(3)	50	No	20/100	29	4	1	lg, some 2nd gr.[2], much 2nd gr.
	Cato-6									occ K, V. lg, deep eye
M11-41	Ith	-	Res(4)	47	50	1/40	6	14	0	all small[4]
	Riv									skins[4], small[2]
	Cato									small
M99-7	Ith	-	Res(3)	22	40/50	0/60	15	5	0	deep stem ends[3]
	Riv									small[2]
	Cato									deep eye
M99-9	Ith	-	Res(4)		50	2/60	13	4	3	some 2nd gr, few K
	Riv									lg, white skin
M146-3	Ith	-	Res(4)	12	50	24/50	12	7	0	occ K, lg
	Riv									
M222-5	Ith	-	=Kat	197	No	16/60	8	5	3	lg, few K
	Riv									white skin, deep eye

		1975 Yield in cwt/A											
		Total	1 7/8	2 1/4	% 2 1/4	Yield[1] index	% 2 1/4[2] index	Appear.[3] 1975	Appear.[4] Avg.	Specific[5] Gravity	Hht.[6]	Int.[7] necr.	Growth[8] cracks
M146-3	Ith	363	337	314	87	.95(3)	1.00	3.5	3.5	-.003	3/54	0/54	f
	Riv	422	414	366	87	1.31(2)	1.30	2.3	2.2		3/26	0/26	
M22-5	Ith	375	360	346	92	1.00(3)	1.17	3.5	3.9(3)	-.001	1/44	2/44	
	Riv	341	325	227	67	.97(2)	1.13	3.3	3.5(2)		2/36	0/36	
M297-31	Ith	423	395	368	87	1.08(3)	.97	4.0	3.9(3)	+.013	1/34	0/34	0
	Riv	456	437	284	63	1.34(1)	1.11	5.0	5.0(1)		0/30	0/30	
	Cato	504	477	419	83	1.11(1)	.97	4.3	4.1(2)		7/15	0/15	0^2
M348-45	Ith	381	346	270	71	.93(3)	.84	3.5	3.9(3)	-.006	0/54	0/54	0
	Riv	326	281	100	31	.96(2)	.70	3.3	3.0(2)		0/38	0/38	
	Cato	one repl.				1.10(1)	.81	5.0	4.4(2)		0/28	0/28	
M351-17	Ith	381	346	313	82	1.04(3)	.85	3.0	3.5(3)	+.002	8/44	0/44	
	Riv	335	294	150	45	1.07(2)	.83	3.0	3.4(2)		0/24	0/24	0
	Cato	one repl.				.94(1)	.60	3.0	3.5(2)		1/21	0/21	
Monona	Cato	300	292	259	86			1.8					
Hudson	Ith	368	348	315	86			2.5					$0^2, f^2$
	Riv	465	453	389	84			3.5					f,m

1. Yield of tubers 1 7/8" relative to Katahdin in same trials (indicates no. of trails).
2. % of tubers 2 1/4" relative to Katahdin in same trials.
3. 0 is very rough; 5 is very attractive.
4. Mean appearance rating over (years).
5. Specific gravity deviation from Katahdin over years. (Ithaca data)
6. Hollow heart in oversize tubers - accumulated over years and locations.
7. Internal necrosis - accumulated over years and locations.
8. Growth cracks: 0 = 2 or 3/plot, f = 4-9/plot, s = 10-20/plot, m = many. Superscript is frequency of observation.
9. Golden nematode, race A. *S. vernei resistance. Remainder are adg resistance.
10. Verticillium wilt: 2 is resistant, 6 is susceptable.
11. Scab index relative to Chippewa, lower number more resistant.
12. Chip color. Number indicates necessary storage condition.
13. Leaf Roll. Proportion of diseased plants after field exposure.
14. After cooking darkending. 0 is white, 1 is gray, 2 is dark.

		GN[9]	VW[10]	Scab[11]	Chip[12]	LR[13]	ACD 0	ACD 1	ACD 2[14]	Notes
M297-31	Ith Cato	-	=Kat	8	50	1/20	13	7	0	V. lg. tubers[2], beauty, flat few K, V. lg.
M348-45	Ith Riv Cato	-	Susc.	0	50	10/60	15	5	0	all small[3], pyrf all small[4], pyrf small
M351-17	Ith Riv Cato	-	=Kat	2	50	10/60	4	6	2	deep catface few K, 2nd gr., deep eye few K
Monona	Cato	+								
Hudson	Ith	-								

NEW YORK STATE

Joseph B. Sieczka

Results of Potato Variety Trials in Upstate New York 1974-1975

Two variety trials were conducted in upstate New York by the Vegetable Crops Department in 1975. Both were located at the Thompson Research Farm at Freeville, New York. The experiments were planted on a Howard gravelly loam and irrigated three times.

Variety Trial I

Fifteen entires were included in Variety Trial I. Eight were white skinned, three were red and one was russeted (see Table 1). Within row spacing was nine inches for all clones except Russet Burbank which was spaced at 13.5 inches. Four clones resistant to golden nematode produced marketable yields greater than 400 cwt/A. The highest yielding clone was K37-1. Tubers of this clone are slightly flattened, mostly round, shallow eyed and bright skinned. Some growth cracks and off-shape were noted and may be potential production problems. L521-7 produced yields slightly higher than its sibling L521-5, which was the lowest yielding of the clones producing marketable yields more than 400 cwt/A. L521-7 tubers were larger and more attractive than tubers of L521-5. Internal necrosis has been a problem in L521-7 on Long Island but was not observed in this experiment. The remaining clone of the top four was B6987-56. Internal necrosis also plagued this clone on Long Island but was not a problem in upstate New York in 1975. B6987-56 tubers are round, shallow eyed, and have a rough textured skin. Tubers of this clone had the highest specific gravity in the experiment. Bison, an attractive, bright red skinned, shallow eyed variety had the lowest specific gravity. Some Bison tubers were affected by deep growth cracks. A clone identified as Alaska Red produced high yields of well shaped tubers. The skin texture is rough or scruffy. Preliminary cooking tests with this clone indicated a tendency toward sloughing when boiled.

Variety Trial II

Five russeted entries were compared to Russet Burbank in Variety Trial II (see Table 2). All entries were spaced 12 inches apart within the row. Russet Burbank produced the highest total yield in the experiment but produced the lowest marketable yields. The primary defect in Russet Burbank was knobby tubers. The other entries did not have the same tendency toward knobbyness as Russet Burbank. The highest marketable yields were produced by B7583-6. Tubers of this line are oblong to long with attractive netting. Unfortunately, a high percentage of the tubers were hollow. Hollow heart also appeared to be a problem in B7732-2 and Nampa. Marketable yield of Targhee was 78% of total yield. Tubers of this clone are oblong to long, have shallow eyes and a heavily netted skin. The largest

tubers were produced by B7732-2. This variety had the lowest specific gravity in the experiment. The primary external defect of B7732-2 was growth cracks.

Storage Results

Samples of four variety trials conducted in 1974 were stored at 50°F until cooking or sprouting data were collected in 1975. Additional samples from Variety Trial I were stored at 45°F until March 20 when the temperature was raised to 60°F. Chip color readings were made by placing whole chips on an Agtron M-30 wide area viewer. The meter was calibrated so that discs 00 and 97 gave readings with the red mode of 0 and 90, respectively. Readings for "generally acceptable chip color" range from 40-45.

Table 3 lists results from the 1974 Variety Trial I. Entries from this experiment that produced relatively light colored chips were Monona, Penn 71, Snowchip, Norchip, Kennebec, B6987-56, 6CX6, and MS 709 when stored at constant 50°F. Relatively light chips were produced by Kennebec, Penn 71, Monona, 6CX6, B6987-56 and K56-2 when stored at 45°F and reconditioned at 60°F.

Entries free of after-cooking darkening were Russet Burbank, Monona, L521-5, L521-7, 6RF1, and B7196-25. Snowchip showed the greatest susceptibility to the disorder. Cascade had greatest amount of sprout growth and K357-16 had the least.

The lightest color chips in Variety Trial II (1974) were produced by B7644-1, B7645-5, and B7848-19 (see Table 4). In addition to variety comparisons, Table 5 illustrates location effects on chip color. Chip color readings of potatoes grown at Canastota, N.Y. were generally darker than those grown at Savannah. The lightest color chips were made from Penn 71 at Savannah. The other entries grown at the Savannah location produced relatively light chips with the exception of K37-1, GRF1 and Hudson.

Upstate New York Table 1. Variety Trial I. Freeville, N.Y. 1975[1/]

Variety	U.S. Number One Yield (cwt/A) Total	2-4"	% Total Yield 2-3¼"	3¼-4"	>4"	Mean Tuber Wt. (oz)
K37-1	682	526	35	42	3	8.4
L521-7	566	463	30	52	7	8.1
B6987-56	537	450	42	41	4	7.1
L521-5	561	444	42	37	2	6.2
Alaska Red	533	399	51	23	0	7.5
Katahdin	573	398	34	35	5	8.0
Kennebec	597	393	37	29	1	7.6
B6503-2	468	375	68	12	0	7.7
NY57	502	348	32	37	4	7.1
6CX6	474	346	41	32	2	6.7
Chieftan	419	337	47	33	0	6.2
K349-7	561	324	16	41	19	9.8
Hudson	490	317	28	37	5	8.4
Bison	401	311	61	17	0	6.1
Russet Burbank	473	282	45	15	1	8.2
$D_{(.05)}$ Tukey	(130)	(129)				(3.0)

Variety	Specific Gravity	Vine Maturity[2/]	% of Total Yield Mis.	Sunburn	Scab	Hollow Heart[3/]
K37-1	1.073	2	5	8	0	16/40
L521-7	1.078	3	1	3	2	5/40
B6987-56	1.091	1	2	5	0	22/115
L521-5	1.078	2	1	9	2	3/40
Alaska Red	1.079	1	1	2	14	0/40
Katahdin	1.074	3	1	11	9	16/40
Kennebec	1.077	2	9	19	1	4/40
B6503-2	1.083	5	5	2	2	14/40
NY57	1.079	3	3	5	12	0/40
6CX6	1.082	1	10	7	4	8/40
Chieftan	1.064	1	8	2	0	2/40
K349-7	1.069	2	13	9	0	10/40
Hudson	1.070	7	9	17	4	0/40
Bison	1.063	5	12	1	0	0/40
Russet Burbank	1.079	4	30	1	0	22/40
$D_{(.05)}$ Tukey	(.006)					

1/ Planted May 16, 1975, between row spacing 34", 9" within row spacing for all clones except Russet Burbank which was 13.5", 1250 lbs of 12-24-12 applied in bands at planting, killed September 12, 1975, harvested September 29, 1975, 4 replications.

2/ Vines rated for maturity on August 25, 1975, 1-9, 9 = completely dead, 1 = green and vigorous.

3/ Numerator = number of tubers with hollow heart, denominator = total number of tubers observed.

Upstate New York Table 2. Variety Trial II. Freeville, N.Y. 1975[1/]

Variety	Total Yield (cwt/A)	U.S. Number One cwt/A 2-4"	% of Total Yield 2-3¼"	3¼-4"	4"	Mean Tuber Wt. (oz)
B7583-6	429	353	46	37	1	7.4
Targhee	451	350	56	22	0	7.3
B7732-2	440	307	26	43	6	9.0
Nampa	387	279	65	7	0	6.2
B7147-8	347	266	64	13	0	7.9
Russet Burbank	457	254	47	9	0	7.9
$D_{(.05)}$ Tukey	(77)	(51)				(1.8)

Variety	Specific Gravity	Vine Maturity[2/]	% of Total Yield Mis.	Sunburn	Hollow Heart[3/]
B7583-6	1.086	2	9	2	21/40
Targhee	1.083	1	11	1	7/40
B7732-2	1.074	2	14	8	18/40
Nampa	1.087	2	13	1	15/40
B7147-8	1.078	7	3	1	3/40
Russet Burbank	1.085	2	35	1	6/40
$D_{(.05)}$ Tukey	(.006)				

[1/] Same as footnote 1, Table 1, except 12" within row spacing.

[2/] Same as footnote 2, Table 1.

[3/] Same as footnote 3, Table 1.

Upstate New York Table 3. Variety Trial I. Freeville, N.Y. 1974.

Variety[1]	Chip Color[2] 1/23/75	Chip Color[2] 4/17/75	After-Cooking Darkening[3] 3/27/75	Sprout Wt. as % of Total Wt. 4/23/75
K357-16	34	--	4.7	1.8
L521-7	26	--	5.0	8.2
K59-7	37	--	4.9	13.3
NY57	37	39	4.6	7.2
K37-1	37	32	4.8	4.9
6RF1	37	38	5.0	4.6
NY53	35	--	4.2	17.2
K56-2	32	40	4.7	4.7
Snowchip	41	33	3.9	18.9
Katahdin	36	33	4.6	17.2
B6987-56	41	40	4.7	10.2
L521-5	29	--	5.0	7.2
Kennebec	41	44	4.8	11.1
MS 709	40	--	4.9	11.2
Cascade	33	--	4.6	20.7
Norchip	40	38	4.5	17.7
Hudson	28	--	4.8	6.2
Monona	43	41	5.0	17.3
6CX6	41	40	4.9	3.1
Penn 71	43	43	4.2	10.1
Russet Burbank	35	35	5.0	4.0
B7147-10	29	--	4.5	7.8
B7147-6	30	--	4.1	8.4
B7196-25	37	--	5.0	16.9
$D_{(.05)}$ Tukey	(8)	(8)	(1.0)	(5.8)

[1] Varieties ranked in descending order of US No. 1 (2-4") yields (See 1974 Report)

[2] Color of whole chips on Agtron M30 reflectance colorimeter set so that discs 00 and 97 gave readings with the red mode of 0 and 90, respectively. Higher values indicate lighter chip color. Minimum values for "generally acceptable color" ranges from 40 to 45. One slice of each of 16 tubers per replication was fried in vegetable oil at 365°F. Samples fried on January 23rd were stored at 50°F from time of harvest. Samples fried on April 17th were stored at 45°F from time of harvest until March 20th when the temperature was raised to 60°F.

[3] Five tubers of each of the three field replications were peeled, dipped in 0.5% sodium bisulfite; cooked for 7 minutes in an autoclave at 15 p.s.i. and rated from 1-5, where 1=severe after-cooking darkening, 5=no darkening.

Upstate New York Table 4. Variety Trail II.
Freeville, N.Y. 1974

Variety[1/]	Chip Color[2/]
B7732-2	38
B7848-19	42
B7188-2	31
B7655-9	37
B7637-7	31
B7645-5	42
B7157-9	27
B7644-1	43
B8151-1	37
$D_{(.05)}$ Tukey	(8)
Katahdin	38

1/ See footnote 1, Table 3.

2/ See footnote 2, Table 3.

Upstate New York Table 5. Variety Trials on Muck Soil, Savannah and Canastota, N.Y. 1974

Variety	Chip Color[1/]	
	Savannah	Canastota
K37-1	36	--
NY57	43	--
Katahdin	43	32
6RF1	39	34
Hudson 6"	--	26
9"	32	26
6CX6	45	37
Wauseon	41	31
Penn 71	47	--
Abnaki	40	--
Monona	44	--
Norchip	44	38
Sebago	--	35
$D_{(.05)}$ Tukey	(6)	(7)

[1/] See Footnote 2 Table 3. Samples stored at 50°F from time of harvest until frying. Savannah samples fried on January 17, 1975 and Canastota samples on February 7, 1975.

NEW YORK STATE

Leon E. Weber

1975 Potato Variety Trials on Long Island

Two variety trials were conducted at the Long Island Vegetable Research Farm in 1975. Variety Trial I consisted of named varieties and two numbered selections planted in soil which had been in potato production for many years. Variety Trial II consisted of golden nematode resistant varieties, numbered selections, and the Katahdin variety as a standard. Variety Trial II was planted in soil which had been in vegetable production for several years.

Variety Trial I.

The selection B6987-56, Cascade, Superior and Hudson produced a higher yield of U.S. No. One potatoes than Katahdin. The highest U.S. No. One yield was produced by B6987-56. B6987-56 produced a regular round tuber with a dark flaky skin. As indicated in Table I, 40 percent of the jumbo tubers cut had internal necrosis. Internal necrosis was also found in 43 of 100 small and medium sized tubers which were selected (1/3 from each replication) and cut. F61025 produced a round to oblong tuber. Many of the tubers had a red blush on the apical end. Chain tubers were common on many of the F61025 and Belleisle tubers. Bison, an early variety, produced small, red, beautiful round tubers. Targhee outyielded Russet Burbank in U.S. No. One yield. Nooksack and Nampa, the other russets grown, produced a very poor yield.

Variety Trial II.

The Hudson variety had the highest U.S. No. One and total yield. In addition to Hudson, three numbered lines outyielded Katahdin. Most of the numbered lines had deep apical eyes and were irregular in shape. The following are notable exceptions:

- the tubers of B6987-56 were regular and round with a flaky skin. Internal necrosis was a serious problem in this line.
- Clones B7805-6 and B7805-1 produced tubers with shallow eyes and a smooth white skin. Internal necrosis showed up in over 40 percent of the tubers in clone B7805-1.

New York (Long Island) Table 1. Variety Trial I. Long Island Vegetable Research Farm, Riverhead, N.Y.--1975[1/]

Variety	Yield (cwt/A) Total	US #1	Percent of Total Yield 1½-2"	2-3½"	3½"	Misshapen	Sunburn	Percent Internal Necrosis[3/]	Specific Gravity	Vine Maturity[4/]
B6987-56	414	362a[2/]	12	86	1	0	0	40	1.086	4
Cascade	398	346ab	11	84	3	2	1	3	1.070	5
Hudson	364	339ab	6	76	17	1	0	0	1.071	3
Superior	368	320ab	12	87	0	2	0	23	1.068	8
Katahdin	351	311b	11	84	4	0	1	3	1.064	3
Bison	311	260c	15	84	0	2	0	0	1.060	9
Wauseon	262	236c	8	88	2	1	1	0	1.068	4
Chippewa	265	227cd	11	79	7	2	2	10	1.060	5
Targhee	282	215cd	17	76	3	7	0	7	1.072	2
Russet Burbank	290	180de	22	61	1	16	0	7	1.076	2
Nooksack	173	150ef	9	84	2	4	0	0	1.079	3
Nampa	204	125f	25	62	0	13	1	0	1.073	2
Belleisle[5/]	359	256	23	71	1	5	1	6	1.073	3
F61025[5/]	312	250	11	78	2	6	2	2	1.072	6

1/ Planted April 21, 1975, between row spacing 34", within row spacing 9", plot size 2 rows by 25', 3 replications, 2,000 lbs./A 8-16-8 applied in bands at planting, irrigated July 8 and September 2, 1975, vine killed September 10, 1975, harvested September 30, 1975.

2/ Means followed by the same letter are not significantly different at the 5% level.

3/ Ten jumbo tubers from each replication were checked.

4/ Vines rated for maturity on August 22, 1975 on a scale of 1-10; 10=completely dead, 1=completely green.

5/ Planted adjacent to the trial.

New York (Long Island) Table 2. Variety Trial II. Long Island Vegetable Research Farm, Riverhead, N.Y.--1975[1/]

Selection	Yield (cwt/A) Total	Yield (cwt/A) US #1	Percent of Total 1½-2"	2-3½"	3½"	Misshapen	Sunburn	Percent Hollow Heart[3/]	Percent Internal Necrosis[3/]	Specific Gravity	Vine Maturity[4/]
Hudson	562	525a[2/]	3	57	36	3	1	7	3	1.072	1
B6987-2	533	503ab	4	85	9	2	0	3	13	1.068	1
B7155-3	531	500ab	5	75	20	1	1	3	10	1.062	3
B6987-56	439	421bc	4	80	16	0	1	20	40	1.082	1
Katahdin	373	355cd	4	77	18	0	1	0	17	1.064	1
B7152-14	437	351cd	10	75	5	10	0	0	0	1.060	3
B7805-6	404	350cde	13	85	1	0	0	0	7	1.068	9
B7155-56	431	345cde	14	77	3	5	1	0	23	1.065	4
B7805-1	350	336cde	3	80	16	0	0	13	13	1.063	1
B7838-9	481	323cde	20	67	0	12	1	0	0	1.076	1
B7840-2	335	303de	4	77	14	5	0	13	3	1.064	7
B7155-51	354	297de	15	84	0	1	0	0	30	1.060	3
Wauseon	296	267def	6	85	5	4	0	0	0	1.060	4
B7744-4	278	251ef	6	83	8	3	1	27	40	1.060	3
B7154-8	251	179f	15	71	0	14	0	0	0	1.060	5

1/ Planted May 14, 1975, between row spacing 34", within row spacing 9", plot size 1 row x 30'. 3 replications, 2,000 lbs/A 8-16-8 applied in bands at planting, irrigated July 9, August 4, August 23, and September 4, 1975, vine killed September 17, 1975, harvested September 30, 1975.

2/ Means followed by the same letter are not significantly different at the 5% level.

3/ Ten jumbo tubers from each replication were sampled.

4/ Vines rated for maturity on September 5, 1975 on a scale of 1-10; 10=completely dead, 1=completely green.

NORTH CAROLINA

F. L. Haynes

Breeding Program

Breeding for early maturity, disease resistance, chipping quality and adaptation to the Tidewater Area continue to be the chief objectives. Chipping quality is important because more than 80 percent of the crop is processed in this manner. Production for fresh market is very limited.

Seedling Production and Clonal Maintenance. The summer hybridization program was conducted at Waynesville. Twenty-two families totaling 15,000 segregates were produced. A segregating population of 13,800 individuals from USDA crosses (North Carolina Table 4) was grown. The 918 selections from this will be grown as 4-hill clones in 1976.

Eastern Trials. Selected clones were tested at four locations in the early commercial area. Late winter rains were heavier than normal, delaying planting. This was followed by a severe drouth in most locations in April and May. The severity of the drouth is reflected in the low yields and lower than normal percentage of size A tubers at two locations (N. C. Tables 2 and 3). A normal crop was produced at Weeksville (N. C. Table 1) and the fourth location failed.

The clone 64C2-3 is being increased for release. It will be in commercial trial in 1976. The clone 71C15-20 is unique for its high dry matter content and its consistently good chipping quality. This early-maturing clone is also being increased for wider testing.

Adaptation Study

The project of adaptation to the temperate zone of *S. phureja* and *S. stenotomum* was continued and expanded. The segregating population included 14,000 seedlings of 60 families of which 40 were in the fifth cycle of selections.

The evaluation of families for dry matter was continued. Sufficient numbers of superior clones of diverse origin are being sought as a base for a population devoted to this single attribute.

North Carolina Table 1. Potato performance trial at Weeksville. Plots were 1 row by 27 ft., 4 replications. Planted 3/26/75, harvested 6/27/75 (92 days). Spacing: 9-inch hills, 40-inch rows. Fertilized, lbs per acre: Broadcast 56 N, 111 P_2O_5, 111 K_2O; Drill 88N, 176 P_2O_5, 176 K_2O.

Variety	US#1-A cwt/A	Percent US#1-A	Specific Gravity	Chip[1/] Color	Appear-[2/] ance	Maturity
Viking	298	95.7	1.063	6.3	8.7	Med. early
Pungo	260	88.9	70	4.5	7.0	Midseason
64C2-3	249	87.0	62	3.0	7.0	Med. early
LaSoda	247	91.5	56	6.5	7.0	Midseason
B7127-N2	239	90.4	65	2.5	9.0	Med. early
Cobbler	232	90.6	72	5.3	6.2	Med. early
Penn-71	231	93.5	68	2.3	7.0	Med. late
71C15-20	223	88.2	82	2.8	8.5	Med. early
B7031-N2	218	87.5	67	3.0	8.2	Med. early
Superior	217	81.6	66	2.8	8.7	Early
B6973-N4	216	84.0	60	5.5	9.0	Med. early
B6959-N1	210	85.2	70	4.8	8.0	Early
Katahdin	205	90.1	59	4.8	8.0	Med. late
B8412-N2	198	85.8	72	4.3	6.0	Med. late
72C23-1	186	85.5	65	4.8	6.5	Midseason
B7127-N18	165	83.6	65	4.3	7.5	Midseason
Norchip	154	88.3	69	3.3	7.7	Med. early
B7127-N22	113	86.8	63	5.0	7.0	Midseason
L.S.D. .05	29	3.7				
C.V. (PCT)	10	3.0				

[1/] Chip color determined by Wise Foods, Borden, Inc., Berwick, Pa. Average of 5 samples, 1 per week for 5 weeks following harvest. 1-4 acceptable with grade 1=perfect; 5 usuable but not desirable, 6-14 unacceptable with 14=black.

[2/] Appearance
1 = Very poor
3 = Poor
5 = Fair
7 = Good
9 = Excellent

North Carolina Table 2. Potato performance trial at Columbia. Plots were 1 row by 27 ft., 4 replications. Planted 3/25/75, harvested 6/26/75 (92 days). Spacing: 9-inch hills, 40-inch rows. Fertilized, lbs. per acre: 150 N, 360 P_2O_5, 300 K_2O.

Variety	US#1-A cwt/A	Percent US#1-A	Specific Gravity	Chip[1/] Color	Appear-[2/] ance	Maturity
Pungo	189	83.0	1.069	4.5	7.0	Midseason
B6987-29	154	82.3	63	3.3	7.0	Med. early
B7865-N10	141	76.9	77	3.3	7.0	Med. early
B6987-56	136	82.6	85	2.5	8.0	Mid season
Superior	134	82.7	72	2.0	8.5	Early
B7127-N2	134	84.2	69	4.0	8.0	Early
Penn-71	133	80.9	66	2.5	7.0	Late
71C4-5	132	67.0	71	2.0	8.0	Med. early
Katahdin	118	87.3	54	4.8	7.5	Med. late
71C15-20	118	68.0	82	2.0	7.0	Med. early
64C2-3	107	57.6	59	2.0	7.0	Med. early
72C23-1	106	62.7	61	4.8	8.0	Med. early
B8412-N2	103	67.1	75	3.0	8.0	Midseason
B7031-N2	94	66.4	66	2.5	8.2	Med. early
Norchip	93	78.0	74	2.3	7.5	Med. early
72C23-2	93	59.3	68	3.3	8.0	Early
B7952-N3	92	66.2	61	4.5	9.0	Early
B6959-N1	86	54.6	70	2.3	8.0	Med. early
B7920-N1	85	61.8	68	4.8	8.5	Early
B6973-N4	85	61.7	59	4.3	7.2	Med. early
B7127-N22	85	69.9	69	3.3	8.0	Med. early
B7127-N18	70	67.1	66	4.3	8.5	Med. early
72C23-5	62	66.1	62	4.0	7.0	Med. early
L.S.D. .05	42	7.4				
C.V. (PCT)	27	5.5				

1/ Chip color determined by Wise Foods, Borden, Inc., Berwick, Pa. Average of 5 samples, 1 per week for 5 weeks following harvest. 1-4 acceptable with grade 1=perfect; 5 usuable but not desirable, 6-14 unacceptable with 14=black.

2/ Appearance
1 = Very poor 7 = Good
3 = Poor 9 = Excellent
5 = Fair

North Carolina Table 3. Potato performance trial at the Tidewater Station, Plymouth. Plots were 1 row by 40 ft., 4 replications. Planted 3/5/75, harvested 7/1/75 (116 days). Spacing: 12-inch hills, 38-inch rows. Fertilized, lbs. per acre: 120 N, 240 P_2O_5, 240 K_2O.

Variety	Total cwt/A	Percent US#1-A	Appear-[1/] ance	Maturity
LaSoda	268	84.6	7.0	Midseason
Pungo	254	80.4	7.0	Midseason
64C2-3	227	78.2	7.0	Early
B7031-N2	225	78.9	8.0	Early
B6973-N4	210	78.0	8.5	Early
Katahdin	209	80.5	8.2	Med. late
Superior	208	71.3	8.0	Early
Chieftan	196	74.9	8.0	Med. early
B7127-N2	195	86.1	8.5	Early
Norchip	195	62.4	7.0	Med. early
Cobbler	191	74.5	6.0	Early
Penn-71	183	89.1	7.5	Med. late
Hi-Plains	170	56.1	8.0	Early
Viking	159	88.8	8.0	Med. early
Norgold R.	153	61.7	9.0	Early
B7127-N18	150	63.4	8.2	Med. early
B6959-N1	136	55.6	7.7	Med. early
Platte	119	54.8	8.2	Med. early
L.S.D. .05	32	7.4		
C.V. (PCT)	11.7	7.2		

[1/] Appearance
1 = Very poor 7 = Good
3 = Poor 9 = Excellent
5 = Fair

North Carolina Table 4. Segregating families grown and selections made in spaced planting at Waynesville. Planted 5/8/75, harvested 9/5/75 (129 days).

Family	Parentage	No. Segregates	No. Selected
B8430	B6705-12 x B6987-145	136	7
B8477	B7164-22 x B6987-221	84	8
B8491	NY 14 x B6987-145	61	4
B8579	Avon x B6987-145	275	13
B8688	Abnaki x K112-9	440	28
B8689	Abnaki x B6943-43	385	15
B8690	Abnaki x B6987-56	440	16
B8694	Cascade x K112-9	385	17
B8696	Cascade x B6987-56	440	10
B8697	Cascade x B7132-14	330	14
B8700	Cobbler x B7132-14	440	14
B8706	Superior x B6987-56	440	24
B8707	Wauseon x K112-9	220	3
B8999	Abnaki x BC7010-2	136	8
B9000	Caribou x B6139-11	231	17
B9001	Caribou x B6987-221	241	12
B9002	Caribou x B7584-8	297	7
B9003	Chieftan x B7160-4	214	14
B9004	Chieftan x B7584-8	251	10
B9005	Chinook x B7584-8	344	12
B9006	Chinook x B7676-3	168	8
B9008	Houma x B7584-8	330	24
B9009	Hunter x BC7010-2	255	24
B9010	Iopride x B7584-4	260	23
B9011	L384 x B7680-2	170	1
B9012	Menominee x BC7010-2	193	13
B9013	Menominee x B7584-8	255	10
B9016	Platte x B674-6	225	29
B9017	Superior x B7584-8	335	50
B9019	Wauseon x BC7010-2	226	13
B9021	Wauseon x B7680-2	385	30
B9025	A64177-4 x B7584-8	263	5
B9033	A64187-4 x B7584-8	184	11
B9036	A66107-69 x B7584-8	195	17
B9038	B7024-35 x 47156	165	20
B9039	B7024-35 x 36038-1	207	14
B9055	Cascade x B7602-2	249	24
B9056	Cascade x B7768-4	330	33
B9057	Cascade x B7901-3	325	22
B9058	Cobbler x B7167-26	260	32
B9059	Cobbler x B7602-2	160	15
B9060	Seminole x B7132-14	150	13
B9061	Superior x B6955-24	110	18
B9062	Superior x B7167-30	275	32

North Carolina Table 4, continued.

Family	Parentage		No. Segragetes	No. Selected
B9063	Superior	x B7768-1	190	26
B9064	Wauseon	x B6532-4	350	20
B9065	Wauseon	x B6955-24	255	17
B9066	Wauseon	x B7132-14	210	14
B9067	Wauseon	x B7167-26	210	23
B9077	B6516-15	x B6943-43	151	6
B9078	B6516-15	x B7132-22	192	9
B9079	B6516-15	x B7602-2	198	8
B9080	B6516-15	x B7768-4	141	15
B9084	136532-4	x B7132-14	129	19
B9085	136532-4	X B7221-4	132	14
B9086	B6532-	x B7602-2	144	5
B9087	B6603-13	x B7167-2	95	8
		Total	13,862	918

NORTH DAKOTA

R. H. Johansen, J. E. Huguelet, B. Farnsworth and R. T. Zink

Breeding Program

Potato Crossing and Seedling Production. Two hundred and sixty crosses were made in the greenhouse during the winter and spring of 1975. An over-application of Thimet applied to the parent plants in early January caused severe stunting and dying of of the leaves and this resulted in rather poor flowering. However, in spite of this, ample seed was obtained from most crosses and during July, August, and September over 40,000 seedling plants were transplanted into greenhouse benches. The number two and three seedling tubers from several of these families will be sent to Texas and California to help supplement their breeding program. From the 1974 seedling families approximately 35,000 were planted in the field at Langdon during the spring of 1975. Seven hundred and thirteen clones were saved at harvest. Seedlings were planted at Langdon on May 13 and 14 and harvested on September 22, 23 and 24th.

Advanced Selections. Plots at Grand Forks were planted on May 20 and harvested on September 11th. Plots were planted at Casselton on May 27-29th and harvested on October 2 and 3rd. A total of four hundred and ninety-one second year, eighty-four third year and eighty-five fourth year selections were planted in plots at Grand Forks, Casselton and Absaraka.

The second year selections were planted for the first time at Absaraka. One hundred and sixty second year North Dakota Texas clones and thirty-eight third year North Dakota Texas clones were planted at Casselton. All of these clones were originally selected by Dr. C. Miller at Lubbock, Texas and originated from North Dakota seedling families. All advanced clones are presently being tested at Homestead, Florida for disease and adaptability.

Promising Selections. There are several advanced clones in the North Dakota breeding program that look promising. Probably the most promising are ND8891-3, ND8913-4 Russ, ND8914-5 Russ, ND9086-1, ND8924-4 Russ, ND8888-1 and ND8888-2. Several red selections also look promising; however, they are all in an early stage of development. They are ND9403-21R and ND9403-16R.

ND8891-3 is a high yielding white with good processing qualities while ND8913-4 Russ and ND8914-5 Russ are Norgold type russets. Most all of these selections are presently being increased by foundation seed growers in North Dakota and Minnesota.

Variety Trials

Replicated variety trials were again grown at Grand Forks, Park River, Minot, Williston and Carrington dryland and irrigation. Ernie French and Ben Hoag, respectively, were in charge of the Williston and Minot trial while Howard Olson was in charge of both trials at Carrington. Wayne Grinde was in charge of the Park River trial, while Don Uhler and Dennis Askim were in charge of the general maintenance of the Grand Forks trial.

The varieties were grown in plots of 25 hills and replicated four times in a randomized block. Twenty-four entries were planted at Grand Forks and Park River.

Eighteen entries were planted at Carrington and fifteen entries were planted at Minot and Williston. Marketable yield consisted of all U.S. No. 1 tubers over 1-7/8 inches in diameter. Specific gravity was determined by the use of a potato hydrometer.

Spacing, fertilizer, soil type, planting and harvest dates of each location were as follows:

Location	Spacing Row in.	Spacing Plant in.	Fertilizer	Soil Type	Planting Date	Harvest Date
Grand Forks	38	12	400# 18-18-10	Bearden clay loam	5/20	10/1
Park River	36	11	600# 18-18-12	Glyndon silt loam	5/12	9/17
Minot	36	14	Broadcast 54-24-0	Williams loam	5/26	9/29
Williston	38	16	23-23-8	Williams loam	5/28	10/1
Carrington (Irrig.)	36	14	600#/A 16-20-6	Heimdahl loam	5/15	10/6
Carrington (Dryland)	36	14	600#/A 18-20-6	Heimdahl loam	5/15	10/6

The 1975 season was again a year of weather diversities. In the spring it was quite wet which again delayed planting until the middle or last of May. Then the last of June there was very heavy rainfall in the Red River Valley. The plots at both Park River and Grand Forks escaped most of the heavy rainfall that occurred. Over 10 inches of rain fell in the southern part of the Red River Valley on June 23rd. The middle of the summer was quite dry and the temperatures were quite cool resulting in good potato production. The season at Carrington was quite similar to conditions at Grand Forks and Park River. The month of June was 230% of the long range average in precipitation and the rest of the season was quite dry and warm at Carrington. Eleven inches of water were applied in the gravity system to irrigate the potato plots. Weather conditions occurring for the trials at Minot and Williston in western North Dakota were somewhat similar to the Red River Valley. It was wet in the spring and moisture seemed to be ample during most of the season. Potato yields at both locations were quite good compared to past years.

Kennebec, ND8891-3, Norchip and ND8888-2 produced the highest yields (North Dakota Table 1). Average yields of these four entries ranged from 301 cwt per acre to 291 cwt per acre. ND8888-1 produced some very high yields when grown at Park River and Grand Forks (North Dakota Table 1) and in similar trials ND9086-1 again produced quite high yields. Bison and Norland were quite similar in yield; however, Bison produced tubers of much brighter red skin color. Line ND8913-4 Russ and ND8914-5 Russ looked quite good in trial.

Although average yields at Park River were higher than at Grand Forks, yields were quite similar. The irrigated trial at Carrington yielded 200 cwt more per acre than the dryland trial.

Norchip,with an average of 1.097 specific gravity, again produced the highest specific gravity or percent total solids. However ND8751-16 and ND8891-3 with 1.096 and 1.095,respectively,were very close behind (North Dakota Table 2). Like Norchip ND8751-16 and ND8891-3 are excellent processing varieties and will be increased by foundation seed growers and tested more extensively by processors. ND8891-3 looks exceptionally good as a french fry and chipping variety while ND8751-16 is excellent for chipping at all times of the year and when grown under all kinds of weather condition

Specific gravities at Park River and Grand Forks were quite similar. This was also true at Minot and Williston in western North Dakota. Carrington dryland produced higher specific gravities than the irrigated trial.

Processing and Culinary Tests. Chip tests are reported in North Dakota Table 3 and 4. All samples were chipped at weekly intervals after being reconditioned. The finished chip product was rated by the Standard Color Chart and the Photo Volt Meter. Percent total yield was also recorded. Potatoes grown in the Red River Valley during 1974 had a poorer color than in previous years and chip samples taken from the different entries in the variety trial showed no exception. This was especially true from samples taken from the Grand Forks trial (North Dakota Table 4). Norchip, ND7196-18, ND8750-20 and ND8767-10R produced the lightest chips after reconditioning for four weeks.

Again all white and russet skin selections in the breeding program were tested for chip quality by the processing laboratory at East Grand Forks, Minnesota. In addition promising selections were tested for flake and french fry quality.

Ten entries in the non-irrigated and irrigated trial at Carrington were tested for chip quality. Agtron readings taken showed that lighter chips were obtained from the non-irrigated trial (North Dakota Table 5).

Boiling and baking tests were done on twenty entries grown in replicated trials at Park River and Grand Forks. Samples from two replications were scored for different boiling and baking tests (North Dakota Tables 6 and 7). After cooking darkening was found for several selections and varieties and sloughing was common in the high dry matter selections and varieties.

Boiling and baking tests were also conducted on 16 entries grown in the irrigated and non-irrigated trial at Carrington (North Dakota Tables 8 and 9). Entries grown in the dryland trial showed much more after cooking darkening than those grown in the irrigated trial. Bison and Norland showed some after cooking darkening in the dryland trial. Sloughing was also more common in the dryland trial and this can be contributed to the very high total solids that is obtained with potatoes grown under dryland conditions at Carrington. It appears that if good culinary qualities are to be obtained potatoes grown in the Carrington area should be irrigated.

Disease Testing. Sixteen advanced North Dakota selections were included in greenhouse resistance evaluations for PXTV and PVX. Only one new selection, ND9004-1S appeared resistant to PSTV (North Dakota Table 10).

The major virus problem confronting the North Dakota breeding program has been the incidence of PSTV. The number of infected tubers and selections infected with PSTV and PVX has been reduced but has not been eliminated. Several points may be considered as reasons for the low but continuous appearance of PSTV: (1) Virus titer increases with time and when low, identification is difficult. (2) The parents act as reservoirs of the virus. (3) The mild strain is all but impossible to detect using the tomato test, especially when its titer is low. In order to overcome these traits, certain procedures have been developed. First, indexing the first year selections following selection from Langdon, has been discontinued. These selections are grown in isolation in Absaraka the following year and indexed the following winter. Second, the parents are carefully monitored by indexing each year so that any virus condition may be located early. Finally, cross protection tests were used to evaluate for the incidence of the mild strain of PSTV. Absaraka selections will be indexed for the first time in 1976. In 1975, cross

protection tests were made on 470 tubers from 148 selections. Of the 148 selections, at least one tuber from each of 122 selections was negative for cross protection and therefore supposedly infected with the mild strain of PSTV. This figure seems very high and indicates that the cross protection test may be unreliable. Therefore Russet Burbank tubers known to be infected with the mild strain of PSTV were tested using the tomato test and appeared to be infected with the severe strain. The existance of the mild strain could not be confirmed by cross protection or by symptom expression, which added further evidence for this unreliability of the cross protection test.

North Dakota Table 11. The Number of Selections and Tubers Indexed for Mild and Severe PSTV and PVX and the Results

Test or Result	Total Number Selections	Total Number Tubers
Indexed	194*	713
Indexed by Cross Protection	148	470
Indexed singly	46	243
Infected with PVX	18	29
Result of Cross Protection PSTV Index		
(-+) Healthy	*	202
(--) Mild PXTV	120	233
(+-) Severe PSTV	28	35
(++) Severe PSTV		
Result Of Single Index PSTV		
(+) Severe PSTV	4	6
(-) Healthy	190*	237

* At least one tuber of almost all selections had an indication of some mild or severe PSTV, therefore few selections were entirely free when considering the cross protection test; there were many (190) that were judged healthy by the single index method.

Biology and Control of Bacterial and Fungal Diseases - Common Scab. Soil compaction, resulting in poor growth of most of the potato selections, forced evaluation of scab resistance to be made from 5 and 10 hill maintenance plots in Grand Forks. Although the incidence of scab was relatively high the evaluations are considered to be only fairly accurate. Several russet selections showed good resistance. The improvement of the scab plot was attempted by seeding sorghum and increasing nitrogen fertilization. Nitrogen fertilization has been reduced in past years because of high usage of manure. Soil testing however has indicated a drop in nitrogen in this plot and therefore a fall application of 250 lbs. of 34-0-0 was applied.

Biology and Control of Bacterial and Fungal Diseases - Late Blight. Fifteen advanced selections were evaluated for resistance to Phytophthora infestans, race 1,4 using the detached leaf method. No sporulation occurred on selection ND8947-2S nor on Norgold. Kennebec and Bison were susceptible and supported sporulation. Bison and Kennebec are both resistant to race 0 while no race 0 tests have been made on ND8947-2S thus far.

Biology and Control of Bacterial and Fungal Diseases - Verticillium Wilt. Evaluations of advanced selections showed that all selections were susceptible except for possible resistance in ND8767-10R and ND9004-1S. In the case of the latter, Fusarium sp. was isolated from Verticillium inoculated test plants and therefore further tests need to be made to more clearly determine the level of resistance to Verticillium albo atrum, if any, which is available in that selection.

North Dakota Table 1. U.S. No. 1 Yield of Varieties and Selections Grown in State Wide Trials, 1975.

	Grand Forks		Park River		Carrington Irrigation		Carrington Dryland		Minot		Williston		Average	
	Cwt/A	%US No.1	Cwt/A	%US No.1	Cwt/A	%US No.1	Cwt/A	%US No.1	Cwt/A	%US No.1	Cwt/A	%US No.1	Cwt/A	%US No.1
Kennebec	271	92	390	95	423	70	230	95	292	90	197	96	301	90
8891-3	252	97	324	95	519	82	250	93	227	82	185	94	293	91
Norchip	297	95	382	95	453	88	225	89	232	81	160	87	292	89
8888-2	275	92	341	92	468	86	243	89	247	86	174	90	291	89
Norgold Russet	272	95	363	97	442	82	232	93	244	84	151	94	284	91
Viking	290	99	278	99	385	72	263	75	244	86	114	96	262	88
8751-16	269	72	310	93	431	84	179	82	186	74	131	89	251	82
Norland	201	97	280	97	368	81	233	93	229	91	117	93	238	92
8850-2	229	92	246	92	403	87	209	82	169	69	131	78	231	83
Russet Burbank	160	89	263	89	378	73	156	92	237	84	167	87	227	86
Bison	138	95	245	96	379	83	217	89	215	80	144	92	223	89
8750-20	195	96	283	99	370	78	229	93	165	88	92	95	222	92
8947-2Russ	219	93	264	92	246	70	171	90	167	80	167	94	206	87
ND8767-10R	179	93	225	92	271	83	154	90	180	79	133	98	190	88
8888-1	359	96	391	97	535	76	183	63					367	83
9086-1	260	91	276	97	526	81	202	87					316	89
8297-1	212	84	265	88	397	88	172	74					262	84
9279-2R	221	92	255	84					190	79	125	91	198	87
8913-4Russ	174	89	174	78	271	77	105	72					181	79
9386-3R	290	93	353	97									321	95
9403-16R	260	95	343	96									302	96
9403-21R	209	98	208	91									209	95
8914-5Russ	194	89	200	85									197	87
7878-1	194	93	200	89									197	91
Average	234	92	286	93	404	80	203	86	215	82	146	91		

North Dakota Table 2. Specific Gravity[1/] and Total Solids of Varieties and Selections Grown in State-Wide Trials, 1975.

	Grand Forks		Fark River		Carrington Irrigation		Carrington Dryland		Minot		Williston		Average	
	Sp. Gr.	Total Solids	Sp. Gr.	Total Solids	Sp. Gr.	Total Solids	Sp. Gr.	Total Solids	Sp. Gr.	Total Solids	Sp. Gr.	Total Solids	Sp. Gr.	Total Solids
Norchip	96	23.1	98	23.5	94	22.4	105	25.5	100	24.0	91	22.0	97	23.3
ND8751-16	96	23.1	95	22.9	88	21.4	104	24.8	99	23.7	92	22.2	96	23.1
ND8891-3	93	22.4	95	22.9	91	22.0	110	26.1	91	22.0	87	21.2	95	22.9
ND8767-10R	93	22.4	91	22.0	83	20.3	99	23.7	98	23.5	88	21.4	92	22.2
ND8850-2	93	22.4	91	22.0	84	20.5	100	24.0	98	23.5	83	20.3	92	22.2
ND8888-2	91	22.0	94	22.7	85	20.7	105	25.0	84	20.5	90	21.8	92	22.2
Kennebec	85	20.7	86	20.9	78	19.2	97	23.3	94	22.7	87	21.2	88	21.3
Russet Burbank	84	20.5	84	20.5	81	19.9	101	24.2	92	22.2	79	19.4	87	21.2
Norgold Russet	88	21.4	88	21.4	80	19.7	93	22.4	90	21.8	80	19.7	87	21.2
Bison	85	20.7	87	21.2	84	20.5	96	23.1	88	21.4	78	19.2	86	21.0
ND8750-20	88	21.4	82	20.1	79	19.4	94	22.7	79	19.4	76	18.8	83	20.3
Norland	84	20.5	81	19.9	78	19.2	87	21.2	84	20.3	81	19.9	83	20.3
Viking	87	21.2	86	20.9	72	18.0	94	22.7	82	20.1	77	19.0	83	20.3
ND8947-2Russ	83	20.3	78	19.2	64	16.2	87	21.2	81	19.9	79	19.4	79	19.4
ND8888-1	93	22.4	89	21.6	82	20.1	106	25.2					93	22.4
ND8913-4Russ	92	22.2	92	22.2	82	20.1	103	24.6					92	22.2
ND8297-1	88	21.4	90	21.8	84	20.5	97	23.3					90	21.8
ND9086-1	88	21.4	84	20.5	83	20.3	90	21.8					86	20.9
ND9279-2R	85	20.7	83	20.3					87	21.2	83	20.3	85	20.7
ND9403-21R	93	22.4	85	20.7									89	21.8
ND9403-16R	89	21.6	87	21.2									88	21.4
ND7878-1	89	21.6	83	20.3									86	20.9
ND8914-5Russ	81	19.9	83	20.3									82	20.1
ND9386-3R	82	20.1	79	19.4									81	19.9
Average	88.6	21.5	87.1	21.2	81.8	20.0	98.2	23.6	89.8	21.8	83.4	20.4		

[1/] 1.0 omitted from specific gravity readings.

North Dakota Table 3. 1975 Chip Tests of Varieties and Selections Grown at Park River, North Dakota, 1974.

	1/23			2/5			2/12			2/19		
	Color Chart[1]	Photo Volt[2]	Yield[3]	Color Chart	Photo Volt	Yield	Color Chart	Photo Volt	Yield	Color Chart	Photo Volt	Yield
Bison	7.5	16.0	29.5	7.0	22.5	29.8	8.0	20.4	30.3	7.5	23.5	30.5
Kennebec	8.3	16.4	29.7	7.3	22.4	31.8	8.5	15.4	29.0	6.0	26.5	31.0
Norchip	6.5	23.0	36.0	6.5	30.3	33.0	6.0	28.9	34.8	5.5	32.7	32.8
Norgold Russet	10.0	8.8	31.5	9.5	10.5	33.0	10.0	11.0	30.8	9.5	11.0	31.3
Russet Burbank	10.0	9.6	30.5	8.5	13.5	30.8	8.5	15.8	31.0	7.5	24.7	29.5
ND7196-18	7.5	16.8	33.0	5.8	26.4	34.5	6.0	28.9	31.5	5.5	25.2	35.3
ND7710-5	8.5	10.7	30.8	7.8	18.3	31.3	7.0	21.0	31.8	6.0	25.8	32.0
ND7878-1	9.0	11.8	32.0	8.0	17.8	31.0	7.5	22.0	30.5	7.3	22.0	30.5
ND8297-1	8.5	14.3	33.8	7.3	20.3	33.8	7.0	27.1	32.8	7.3	23.7	31.0
ND8742-2	8.0	12.5	31.0	5.5	26.8	32.0	6.5	26.9	30.8	4.8	30.3	30.5
ND8750-20	8.0	13.0	31.5	6.5	25.5	31.0	5.5	28.3	30.8	5.0	27.7	33.0
ND8767-10R	8.0	13.5	30.0	8.0	21.3	33.5	7.0	24.0	32.0	5.0	29.0	33.5
ND8850-2	6.0	22.7	34.0	6.3	26.0	33.5	5.5	28.8	34.3	5.5	31.0	33.0
ND8888-2	7.5	17.4	34.5	7.0	22.0	35.0	7.8	15.5	33.0	7.5	20.4	31.8
ND8913-4Russ	9.8	7.6	32.0	9.0	10.3	32.0	9.0	15.3	32.0	8.5	16.4	30.5
ND8914-5Russ	10.0	9.3	32.0	9.0	13.8	32.5	9.5	13.5	33.5	8.5	16.5	32.3
ND8947-2Russ	11.0	5.3	30.5	9.3	10.5	31.5	9.0	11.8	30.8	10.0	10.2	30.8
ND9079-11R	9.0	8.5	31.5	9.0	14.5	33.0	10.0	11.0	33.0	9.0	13.0	32.0
ND9086-1	9.0	9.0	29.8	6.5	22.6	30.5	6.0	25.3	30.5	6.5	26.5	29.3
ND9109-12R	11.0	5.0	29.5	11.0	10.5	27.5	9.0	17.5	28.5	8.5	14.0	29.0

[1] Color Chart (1 light, 11 dark).

[2] Photovolt - higher numbers are lighter in color.

[3] Yield - Percent chip yield.

North Dakota Table 4. 1975 Chip Tests of Varieties and Selections Grown at Grand Forks, North Dakota, 1974.

	1/23			2/5			2/12			2/19		
	Color Chart[1]	Photo Volt[2]	Yield[3]	Color Chart	Photo Volt	Yield	Color Chart	Photo Volt	Yield	Color Chart	Photo Volt	Yield
Bison	9.5	5.0	29.5	9.5	8.3	29.5	8.5	12.5	29.3	9.0	12.0	30.0
Kennebec	10.8	4.5	30.5	8.5	13.0	26.3	8.5	12.9	29.8	8.5	13.7	29.5
Norchip	9.8	6.3	32.8	8.5	13.8	30.3	8.0	16.9	32.0	7.0	16.4	33.0
Norgold Russet	11.5	3.0	29.0	10.0	8.0	29.0	10.0	6.5	29.0	10.0	8.8	30.5
Russet Burbank	10.5	4.3	28.3	10.0	7.8	28.5	7.5	9.0	29.5	9.8	11.0	27.8
ND7196-18	9.0	5.9	29.0	7.5	20.5	29.0	8.5	19.3	31.5	7.0	22.3	31.5
ND7710-5	10.0	4.5	32.3	8.0	17.8	32.8	8.2	16.9	31.0	8.0	18.9	31.5
ND7878-1	10.3	4.0	28.8	8.0	13.0	31.5	8.0	16.0	31.5	7.5	20.5	31.0
ND8297-1	10.8	4.5	28.7	8.5	12.5	29.3	8.0	19.4	32.8	7.8	20.6	31.5
ND8742-2	10.5	5.0	28.5	8.5	13.5	30.3	8.0	16.8	28.8	6.5	21.5	31.0
ND8750-20	8.5	7.0	31.5	7.3	19.0	31.3	8.8	14.8	30.3	6.5	22.3	30.8
ND8767-10R	11.0	3.5	28.5	8.0	14.5	32.0	9.0	10.0	33.0	9.0	16.3	33.0
ND8850-2	9.3	7.1	32.3	7.3	21.5	32.3	7.5	21.7	32.3	8.0	20.9	32.8
ND8888-2	10.5	4.8	32.0	9.0	10.3	27.0	9.0	18.8	30.3	9.0	13.0	33.0
ND8913-4Russ	11.0	2.5	29.3	10.0	7.8	31.8	10.0	8.0	31.3	10.0	7.4	30.5
ND8914-5Russ	10.8	3.0	29.5	9.5	8.3	29.5	10.0	8.4	31.3	10.0	8.2	28.3
ND8947-2Russ	11.3	2.5	27.5	10.0	5.5	28.5	10.0	6.8	28.8	10.0	8.9	32.0
ND9079-1R	11.0	3.5	29.5	10.0	9.0	31.0	9.5	10.0	32.0	10.0	8.8	32.5
ND9086-1	10.0	4.8	26.3	9.0	13.3	29.0	8.8	12.5	28.0	8.0	15.1	28.0
ND9109-12R	11.5	2.0	27.5	10.0	6.0	28.5	10.0	8.5	31.0	8.0	15.3	30.3

[1] Color Chart (1-light, 11-dark).

[2] Photovolt - higher numbers are lighter in color.

[3] Yield - Percent chip yield.

North Dakota Table 5. Chip Tests of Varieties and Selections Grown Under Dryland and Irrigation at Carrington, ND, 1974.

Varieties	Agtron Reading	
	No Irrigation	Irrigation
Bison	37.5	30.8
Kennebec	42.3	26.0
Norchip	41.0	31.5
ND7196-18	39.0	34.0
ND7710-5	38.5	35.7
ND8742-2	38.0	36.3
ND8750-20	39.5	37.3
ND8767-10R	39.3	36.3
ND9086-1	36.0	33.5
ND9109-12R	29.0	16.5

North Dakota Table 6. 1975 Cooking Tests of Varieties and Selections Grown at Park River, 1974.

	Boiling						Baking			
Varieties	Sloughing[1/]	Mealiness[2/]	Texture[3/]	Color[4/] After Cooking	Color[5/] 4 hours After Cooking	Flavor[6/]	Mealiness	Texture	Color	Flavor
Bison	10.0	7.5	9.0	8.5	5.0	9.0	8.0	8.0	9.0	8.5
Chieftain	10.0	7.5	8.0	9.0	6.0	8.0	7.0	8.5	9.0	6.5
Kennebec	9.0	7.5	9.0	9.0	5.5	7.0	5.0	5.5	8.5	6.0
Norchip	9.0	10.0	9.5	9.0	7.5	9.0	9.0	10.0	8.5	9.0
Norgold Russet	8.5	8.5	9.5	9.0	5.0	9.5	8.5	9.0	10.0	8.5
Norland	9.0	6.0	7.0	9.5	4.5	8.5	7.0	6.5	9.5	8.0
Red Pontiac	9.0	6.5	6.0	9.0	7.5	6.0	6.5	6.5	8.5	7.0
Russet Burbank	10.0	6.0	6.5	7.5	6.0	4.0	6.0	6.0	8.0	4.0
Viking	9.5	7.5	8.0	10.0	8.5	9.0	8.0	8.0	10.0	9.0
ND7196-18	8.5	7.5	8.5	8.0	4.5	4.5	8.0	8.0	8.0	8.0
ND7710-5	8.0	9.5	9.5	7.5	7.0	8.5	8.0	8.0	8.5	8.5
ND7878-1	8.5	9.0	9.0	6.5	4.0	8.0	8.0	8.5	9.0	8.5
ND8297-2	9.5	8.0	9.0	9.0	7.0	8.0	7.5	8.0	8.0	8.0
ND8742-2	2.5	6.0	8.0	8.0	6.5	6.5	8.0	8.5	8.5	8.5
ND8750-20	9.0	8.5	8.5	9.0	5.5	8.0	8.5	9.0	9.0	8.5
ND8767-10R	9.5	8.5	9.0	7.0	4.5	8.0	8.0	7.0	9.0	7.5
ND8850-2	7.0	9.0	9.0	9.0	5.5	8.5	8.0	8.5	9.5	8.5
ND8888-2	8.0	7.0	8.5	9.0	7.5	8.5	7.0	8.0	9.0	8.0
ND8913-4Russ	7.5	7.5	7.5	10.0	8.5	9.0	7.5	8.5	9.0	8.5
ND8914-5Russ	5.0	8.0	9.0	9.0	8.0	9.0	8.0	9.0	9.5	8.5
ND8947-2Russ	5.5	6.5	7.5	7.5	6.5	7.5	6.5	7.0	7.5	7.5
ND9079-1R	5.0	8.0	8.0	8.5	6.5	8.0	7.5	6.5	8.0	8.0
ND9086-1	7.5	9.0	9.0	9.5	6.5	9.0	7.0	7.0	9.0	8.5
ND9109-12R	6.5	8.0	8.5	9.0	4.5	8.5	6.0	5.5	8.5	6.5

1/ Severe Sloughing - 1, No sloughling - 10

2/ Not mealy - 1, Very dry and mealy - 10

3/ Poor Texture - 1, Good Texture - 10

4/ Dark - 1, Very White - 10

5/ Dark - 1, Very White - 10

6/ Poor flavor - 1, Excellent flavor - 10

North Dakota Table 7. 1975 Cooking Tests of Varieties and Selections Grown At Grand Forks, 1974.

	Boiling						Baking			
Varieties	Sloughing[1/]	Mealiness[2/]	Texture[3/]	Color[4/] After Cooking	Color four[5/] hrs. After Cooking	Flavor[6/]	Mealiness	Texture	Color	Flavor
Bison	9.5	7.5	7.5	7.5	6.0	8.0	7.5	8.0	9.0	8.5
Chieftain	9.5	8.0	8.5	8.0	6.5	8.0	7.0	7.5	9.0	7.5
Kennebec	9.5	6.5	8.0	7.5	5.0	8.0	7.0	7.5	8.5	8.0
Norchip	9.0	8.0	9.0	8.0	5.5	8.5	9.0	9.5	9.0	9.0
Norgold Russet	9.5	8.5	9.0	9.0	7.0	9.0	8.0	8.5	9.0	9.0
Norland	9.5	7.5	8.0	9.5	6.5	8.5	7.0	7.5	8.5	8.5
Red Pontiac	9.5	7.0	8.0	9.0	7.0	7.5	8.0	8.5	9.0	8.0
Russet Burbank	10.0	8.0	7.5	7.0	6.0	7.0	7.0	5.5	7.5	6.5
Viking	9.5	7.0	8.0	10.0	6.0	9.0	8.0	8.0	10.0	9.0
ND7196-18	9.0	7.5	9.0	8.0	5.0	8.5	8.0	8.5	8.0	8.5
ND7710-5	9.0	9.0	9.5	8.5	7.0	9.0	8.5	9.0	9.0	8.5
ND7878-1	9.5	8.0	8.5	7.5	6.0	8.0	7.5	8.0	8.5	8.5
ND8297-1	10.0	8.0	9.0	8.5	5.5	7.5	8.0	9.0	8.5	8.5
ND8742-2	7.0	8.0	9.0	7.5	6.5	8.5	8.0	8.5	8.0	8.5
ND8750-20	10.0	8.5	9.5	9.0	7.0	9.0	8.0	9.0	9.5	8.0
ND8767-10R	9.5	9.0	9.5	8.5	6.0	8.5	7.5	8.0	10.0	8.5
ND8850-2	9.0	9.0	10.0	8.5	6.0	9.0	8.0	8.5	9.0	9.0
ND8888-2	9.5	8.5	9.5	9.0	5.5	9.0	7.5	7.5	10.0	8.0
ND8913-4Russ	9.0	8.5	9.5	9.0	8.5	8.0	7.5	8.5	10.0	8.0
ND8914-5Russ	8.0	9.0	9.0	8.5	7.0	9.0	8.0	9.0	10.0	8.5
ND8947-2Russ	8.5	7.5	8.5	7.0	6.0	9.0	7.0	7.0	7.0	7.0
ND9079-1R	4.5	8.5	8.5	8.5	7.5	8.5	7.0	7.0	9.5	8.0
ND9086-1	8.0	7.5	8.5	9.5	8.0	9.0	8.0	9.0	9.5	8.0
ND9109-12R	8.0	7.0	8.5	9.0	5.5	8.5	7.0	7.5	9.5	8.0

1/ Severe Sloughing - 1, No sloughing - 10.

2/ Not mealy - 1, Dark mealy - 10.

3/ Poor Texture - 1, Good texture - 10.

4/ Dark - 1, Very White - 10.

5/ Dark - 1, Very White - 10.

6/ Poor Flavor - 1, Excellent flavor - 10.

North Dakota Table 8. 1975 Cooking Tests of Varieties and Selections Grown Under Dryland - Carrington, 1974.

	Boiling						Baking			
Varieties	Sloughing[1]	Mealiness[2]	Texture[3]	Color[4] After Cooking	Color four[5] hrs. After Cooking	Flavor[6]	Mealiness	Texture	Color	Flavor
Bison	9.5	7.3	8.3	7.5	3.5	8.5	7.5	8.0	9.3	8.3
Chieftain	9.3	8.3	8.8	9.0	6.3	9.0	7.0	7.5	9.0	8.5
Kennebec	5.8	8.5	8.8	7.3	5.5	8.5	8.3	8.5	9.0	8.8
Norchip	3.8	9.5	9.5	8.0	5.0	9.3	8.0	9.0	9.8	9.3
Norgold Russet	6.5	7.5	8.3	9.3	5.3	8.8	7.5	8.3	10.0	8.5
Norland	8.8	7.5	8.3	9.0	3.5	8.3	7.3	8.0	9.5	8.0
Red Pontiac	8.0	7.8	8.0	8.5	7.0	8.3	7.5	7.5	8.3	7.3
Russet Burbank	5.8	9.0	9.5	8.3	6.0	9.0	9.0	9.3	9.5	8.8
Viking	8.8	7.3	8.0	9.8	6.0	8.0	7.3	7.8	9.8	8.3
ND7196-18	8.3	8.0	9.0	7.5	4.0	8.3	8.0	8.3	9.3	8.3
ND7710-5	6.0	7.8	8.3	7.5	4.8	8.0	7.3	8.0	9.0	8.3
ND8742-2	4.8	7.8	8.0	7.3	6.5	8.0	8.0	8.5	8.5	9.0
ND8750-20	9.8	8.8	9.3	9.0	5.8	9.0	7.5	8.0	9.3	8.8
ND8767-10R	8.3	8.5	8.8	7.8	3.0	8.5	8.0	8.8	9.5	8.8
ND9086-1	5.0	8.0	9.3	8.5	6.8	9.3	7.5	8.3	9.8	8.8
ND9109-12R	4.0	7.0	8.0	7.8	4.3	8.0	6.8	7.5	9.3	8.0

1/ Sloughing - 1, No Sloughing - 10

2/ Not Mealy - 1, Very dry, mealy - 10

3/ Poor Texture - 1, Good Texture - 10

4/ Dark - 1, Very white - 10

5/ Dark - 1, Very white - 10

6/ Poor flavor - 1, Excellent flavor - 10

North Dakota Table 9. 1975 Cooking Tests of Varieties and Selections Grown under Irrigation at Carrington, 1974.

	Boiling						Baking			
Varieties	Sloughing[1]	Mealiness[2]	Texture[3]	Color[4] After Cooking	Color 4[5] hrs.After Cooking	Flavor[6]	Mealiness	Texture	Color	Flavor
Bison	10.0	7.3	7.5	7.8	6.0	8.0	7.0	7.3	9.0	8.3
Chieftain	9.8	7.8	8.8	8.8	8.5	8.3	7.5	7.8	8.5	8.3
Kennebec	9.3	7.8	7.8	8.0	8.0	8.5	8.8	9.0	8.0	8.0
Norchip	7.5	8.8	8.8	7.8	6.5	9.0	8.0	8.3	9.8	9.0
Norgold Russet	8.8	8.3	8.8	9.3	6.0	9.3	7.8	8.3	9.8	9.3
Norland	9.7	7.7	8.0	8.7	5.3	8.3	5.5	7.7	8.0	8.3
Red Pontiac	9.3	7.3	7.3	7.3	7.5	7.0	6.3	6.8	8.0	8.0
Russet Burbank	9.8	9.3	9.3	7.3	7.8	8.5	7.8	8.8	7.8	9.3
Viking	9.3	7.8	8.0	10.0	9.0	8.5	7.3	8.0	9.5	8.5
ND7196-18	7.8	8.3	8.3	7.5	7.8	8.3	8.0	8.5	7.8	8.8
ND7710-5	5.3	8.7	8.7	7.7	5.7	8.0	8.0	8.3	8.0	8.3
ND8742-2	8.6	7.7	8.3	7.7	8.7	9.0	6.7	6.7	8.0	7.7
ND8750-20	10.0	8.0	7.7	8.7	7.3	8.0	7.0	7.7	8.0	8.0
ND8767-10R	9.8	8.3	8.8	9.0	6.8	9.0	7.5	7.8	8.8	8.5
ND9086-1	8.5	7.5	7.8	9.3	8.5	7.8	7.5	7.5	8.8	7.8
ND9109-12R	9.0	6.8	7.0	8.8	6.5	8.0	6.0	6.0	8.8	7.8

1/ Sloughing - 1, No Sloughing - 10

2/ Not mealy - 1, Very dry and mealy - 10

3/ Poor Texture - 1, Good Texture - 10

4/ Dark - 1, Very white - 10

5/ Dark - 1, Very white - 10

6/ Poor flavor - 1, Excellent flavor - 10

North Dakota Table 10. Results of PVX and PSTV Resistance Evaluations, 1975

Selection Number	PVX[1/]	PSTV[2/]
Bison (6634-2R)	S	R
ND7710-5	S	S
ND7878-1	S	R
ND8751-16	S	S
ND8767-10R	R	R
ND8888-1	S	S
ND8888-2	S	S
ND8891-3	S	R
ND8913-4S	S	S
ND8914-5S	S	R
ND8917-5S	S	R
ND8924-4S	S	S
ND8947-2S	S	S
ND9004-1S	R	R
ND9086-1	S	S
ND9109-8R	S	S

1/ S = Susceptible
R = Resistant

2/ The evaluation for PSTV resistance is not as reliable as that for PVX due to tomato disease escapes.

OHIO

Floyd Lower, A. R. Mosley, E. C. Wittmeyer, Randall Rowe, David Kelly

OHIO POTATO VARIETY TRIALS - 1975

The work was done under a cooperative arrangement between the Department of Horticulture of the Ohio Agricultural Research and Development Center and the Ohio State University, the Ohio Potato Growers Association and local growers. The purpose is to test promising new varieties under various farm practices and conditions.

Nine varieties and seedlings were planted in three replicates on each of six farms. In addition to the main study on the six farms, fifteen lots were tested in a similar manner for the early market on sandy soil in southern Ohio. On two of the six farms 30 other lots were tested in small duplicated "Observation" plots to find promising new selections for the main study next year. The nine main plot varieties were also tested on muck soil at Celeryville, and were used in herbicide tests at Ohio State University. A complete report including all Ohio potato work is available at the Research Center at Wooster.

Each plot consisted of two rows, in each of which 50 seed pieces were planted. Seed spacing varied from 8½ to 11 inches in the rows and 32 to 36 inches between rows. Each grower followed his usual field practices in planting, fertilization, culture, and spraying. Planting dates varied from April 12 to May 27, except on one farm where rains delayed planting until June 23. The seed was cut shortly before planting in each case, except the June 23 planting, and was dusted with polyram.

Fertilizer practices varied but were generally equivalent to about 800 to 1,200 pounds of 10-20-20 per acre with additional nitrogen in some cases. Herbicides and systemic insecticides were used. Soils were various types of silt loam except on the early market farm where the soil is a gravelly loam.

Rainfall was generally adequate and fairly well distributed, except on the June 23 planted farm where it was excessive. It was also excessive on three of the farms in September.

Stand, vigor, and disease were evaluated during the growing season. The tubers were weighed when harvested and a fifty pound sample was then collected for tests on specific gravity, chipping quality and storage.

Stands were generally good on four farms and fair on the fifth. They were poor on the other two farms, particularly for some varieties. Very little virus disease was found. Cutworms and stalk borers were numerous in some fields accompanied by considerable stem rot on many lots. Fusarium and/or verticillium wilt infection was severe on one of the two farms checked weekly, particularly in the more susceptible selections. It was worse in the earlier varieties than in the later ones.

Superior and Katahdin were included as standards for grade, yield, and other responses; and Kennebec was included as a chip quality standard. Line W718 produced the highest average marketable yield in the main plots on the six farms with Hudson second. Katahdin, Shurchip and Kennebec followed. In the last four years, W718 not being included, Hudson, Shurchip, and Kennebec outyielded the other vaieties. Yield responses among the lots tested varied far more in 1975 than usual.

The average marketable yield in Cwt. per acre for the six farms follows: W718 371, Hudson 348, Katahdin 336, Shurchip 327, Kennebec 321, W710 315, 6CX6 307, Superior 273, Norchip 272 and average 319. Norchip was usually poor in 1975. Superior being early should not be compared with later varieties in yield.

Specific gravity and chip tests were made at Ohio State University by Dr. Wilbur A. Gould, and are reported separately. The term "marketable yield" used in the tables is essentially synonymous with U.S. No. 1 grade, i.e. A size tubers fairly free of external defects. The data in the tables for the main plots are the averages of the six farms.

OHIO TABLE 1. Average Yields of Marketable Potatoes by Variety and by Farm in Cwt. Per Acre- Main Plots - Ohio Potato Variety Trials - 1975 (listed in order of average yield) (Nearest even Cwt.)

AVERAGE OF SIX FARMS		FARM No. 1	FARM No. 5	FARM No. 3	FARM No. 4	FARM No. 2	FARM No. 6
Lot No.		Lot No.	Lot No.	Lot No.	Lot No.	Lot No.	Lot No.
3. W 718	371	3. 395	3. 446	3. 412	8. 403	9. 532	7. 247
9. Hudson	348	5. 376	5. 360	8. 379	9. 360	5. 448	5. 233
8. Katahdin	336	6. 363	6. 352	9. 373	5. 354	7. 436	3. 232
5. Shurchip	327	7. 357	8. 350	2. 309	1. 340	2. 431	9. 228
7. Kennebec	321	4. 356	2. 326	6. 288	2. 330	6. 404	1. 227
2. W 710	315	2. 344	7. 290	7. 271	7. 326	8. 387	8. 223
6. 6 C X 6	307	9. 321	9. 272	1. 247	4. 292	1. 344	4. 177
1. Superior	273	1. 275	4. 271	4. 213	6. 265	4. 326	6. 170
4. Norchip	272	8. 274	1. 203	5. 192	(No lot 3)	(No lot 3)	2. 148
AVERAGE OF ALL LOTS	319	340	319	298	334	414	209

OHIO TABLE 2. Summary of Average Yield and Other Data in Main Plots.
Ohio Potato Variety Trials - 1975 (Listed in approximate order of maturity)

Variety	Percent Stand	Wt. of 40 Tubers - Lbs.	Percent Marketable	Market Yield Cwt./A (2)	Order of Yield
Superior	93	14.0	86.0	273	8
W 710	87	16.2	89.9	315	6
W 718 (1)	80.5	16.7	87.7	371	1
Shurchip	94	13.0	87.4	327	4
Katahdin	90	17.4	89.1	336	3
6 C X 6	83.5	15.3	80.8	307	7
Norchip	77	14.2	80.6	272	9
Kennebec	89	20.3	79.2	321	5
Hudson	94	21.0	84.0	348	2
Average	87.5	16.5	85.0	319	

(1) Not included on Farms 2 and 4

(2) Nearest even Cwt.

OHIO TABLE 3. Early Market Potato Variety Trials - 1975 - Marietta, Ohio.
(Average of three replicates. Listed in order of marketable yield)

VARIETY	PERCENT STAND	PERCENT SIZE B (1)	PERCENT CULLS	MARKETABLE YIELDS PER CENT	MARKETABLE YIELDS CWT. PER A. (2)
W 710	92	9.3	4.7	85.9	310
Hudson	99	4.9	11.7	83.4	261
Shurchip	93	9.3	4.2	86.5	252
Superior	92	5.7	7.5	86.9	235
Kennebec	90	11.2	10.1	78.7	224
Onaway	95	10.7	11.9	77.4	222
Anoka	96	16.9	3.1	80.0	219
W 718	88	14.3	3.2	82.5	199
Penn 71	90	13.7	8.3	78.0	198
Norchip	81	12.8	5.8	81.4	197
Katahdin	92	17.3	2.3	80.3	170
6 C X 6	91	22.6	2.2	75.2	161.5
Wischip	95	20.6	2.2	77.2	161.3
Targhee	87	40.2	4.9	54.9	81
Nampa	97	48.7	10.1	41.2	75
AVERAGE	92	17.2	6.2	76.6	198

(1) 1-7/8" screen

(2) Reported in nearest Cwt.

OHIO TABLE 4. Percent Marketable and Marketable Yields in Cwt. Per Acre in "Observation" Plots on Two Farms. Ohio Potato Variety Trials - 1975
(Listed in approximate order of maturity)

	FARM 5		FARM 2		AVERAGE		
VARIETY	PERCENT MARKET-ABLE	CWT. PER ACRE	PERCENT MARKET-ABLE	CWT. PER ACRE	PERCENT MARKET-ABLE	CWT. PER ACRE	ORDER OF YIELD
Anoka	86.1	273	92.6	293	89.3	283	18
Wischip	89.2	215	89.8	278	89.5	246.5	26
W 623	85.1	325	80.2	341	82.6	333	13
1111-2	72.3	262	48.4	133	60.3	187.5	29
NC 64 C 2	68.2	249			68.2	249	25
Onaway	83.0	271			83.0	271	21
Penn 71	78.4	299	88.7	388	83.5	343.5	9
B6987-56	86.1	317	95.9	439	91.0	378	4
F61025	71.9	194	81.2	323	76.5	258.5	24
W 726	89.0	331	90.7	378	89.8	354.5	6
A K F Y	51.8	96	56.0	278	53.9	187	30
W 723	91.2	331	90.2	356	90.7	343.5	8
W 721	92.3	371	94.4	375	93.3	373	5
W 728	91.7	375	80.2	322	85.9	348.5	7
ND 8888-2	66.9	271	70.0	293	68.4	282	19
W 715	81.4	292	73.5	348	77.4	320	15
W 731	82.7	290	80.2	359	81.4	324.5	14
MS 709	80.1	298	77.4	326	78.7	312	16
ND 8891-3	72.2	408	89.0	391	80.6	399.5	3
FL 73	79.6	243	75.7	278	77.6	260.5	22
711-8	83.6	276	88.9	394	86.2	335	12
Targhee	76.0	286			76.0	286	17
Nampa	51.3	223	61.9	231	56.6	227	28
Belleisle	72.6	274	69.4	276	71.0	275	20
Snowchip	77.0	413	82.2	436	79.6	424.5	1
AK 28-8	75.0	342	81.6	329	78.3	335.5	11
AK 13-2	63.6	238	63.2	283	63.4	260.5	23
6 R F 1	78.3	388	75.9	444	77.1	416	2
AK 11-4	57.2	165	66.0	297	61.6	231	27
AK 25-5	67.4	252	88.8	424	78.1	338	10
AVERAGE	76.7	286	79.0	334	77.85	310	

PENNSYLVANIA

J. D. Harrington and D. R. MacKenzie

Potato variety trials were conducted at three locations in Pennsylvania in 1975. Location of experimental sites, cultural information, and initial determination dates are presented in Pennsylvania Table 1.

Soils at experimental sites were deep, heavy (silt loam), and well drained. Soil pH ranged from 6.0 to 6.4. Prior to hand-planting, rows were furrowed-out 3 feet apart and simultaneously treated with a systemic insecticide and commercial fertilizer. Normal cultural practices were maintained throughout the growing season. Soil moisture was not limiting.

Seed for 11 of the named varieties and numbered seedling selections was obtained from the Maine State Seed Board at Sangerville, Maine. Seed of 6 CX-6, 8 EI-2, 8 ER-12, 8 GV-5, 8 MS-4, 8 NO-3, 8 NW-8, 8 OT-2, 8 PO-3, 8 SA-1, and NC64C2-3 was obtained in Pennsylvania; whereas, seed of AK37-19, AK11-68-4-71, and Snowchip was obtained from Alaska. Seed pieces (4-cut) were planted 8 inches apart within 25-foot single-row plots, with a 3-foot break between plots. A randomized block design with four replications was employed.

Information on the origin of the four early-, five medium-, and 16 late-maturing varieties and seedlings is included in Pennsylvania Table 3.

Production and Quality Indices

Varietal maturity, tuber production, and tuber quality indices were obtained as follows:

Maturity: Final maturity grouping (early, medium, late) was determined by percent of vegetative tops naturally dead in September.

Total yield, cwt/A: Tubers 1-1/2 inches and larger in diameter were harvested from plots and weighed; total plot weights were converted to hundredweight yields per acre.

Size A yield, cwt/A, and percent: Harvested tubers from each plot were sized and tubers 1-7/8 inches (minimum) and larger in diameter were converted to hundredweight yields per acre. Size A shall contain at least 40 percent of the potatoes 2-1/2 inches or larger in diameter.

Size B yield, cwt/A: Harvested tubers from each plot were sized and tubers from 1-1/2 to 2-1/4 inches (maximum) in diameter were converted to hundred weight yields per acre.

Bakers, cwt/A: Harvested tubers from each plot were sized and tubers 3 inches and larger in diameter were converted to hundredweight yields per acre.

Specific gravity: Determined from approximately eight-pound tuber samples by the air-and-water method.

Percent total solids: Values obtained directly from specific gravity readings by employing the conversion table reported by G.V.C. Houghland.

Chip color: Ratings were made subjectively using PCII Reference Color Chart 1206-U. Lower indices are lighter in color. Varieties with ratings above 7.0 are considered unacceptable.

Tuber quality and chip indices were determined on potatoes 2-1/2 inches in diameter size by the Maine Agricultural Experiment Station at Presque Isle, Maine. After harvest, tubers were stored in dry barns until grading without facilities for control of temperature or humidity. Graded tuber samples for chips were stored at room conditions before chipping.

Results

Production and tuber quality indices for the 25 potato varieties and seedlings grown at three locations are reported in Pennsylvania Table 2. Highest average total yield per acre, 518 cwt, was obtained in Schuykill County (east); whereas, lowest yields per acre, 291 cwt, were produced in Cambria County (central). Highest and lowest average tuber specific gravity was obtained in Lancaster County (southeast), 1.081, and Schuylkill County, 1.074, respectively. Varietal production and quality varied for location. Seedling B6987-56 produced high yields (except in Cambria County), tubers high in specific gravity, and chips satisfactory in color regardless of location.

Tuber characteristics after harvest and grading (2-1/2 inches in diameter size) are reported in Pennsylvania Tables 3 and 4.

Pennsylvania Table 1. Experimental sites, cultural information, and determination dates for potato varieties and seedlings grown in Pennsylvania, 1975.

County	Cooperator	Pltg. Date	Fert. at Pltg., lbs/A N	P_2O_5	K_2O	Mg	Maturity
Cambria (C)	Joseph Leiden	5/29	100	200	200	20	9/5
Lancaster (SE)	Agronomy Dept.	4/24	150	100	100	--	9/5, 11, 15
Schuylkill (E)	Monroe Shadle	5/8	142.5	95	95	--	9/15

County	Harvest	No. of Days from Pltg. to Harvest	Graded	Spec. Grav.	Chipped
Cambria	9/30	124	10/16	11/3	12/8
Lancaster	9/17	146	10/2	10/22	12/8
Schuylkill	9/17	132	10/10	11/2	12/8

Pennsylvania Table 2. Production and tuber quality indices of potato varieties grown in Pennsylvania, 1975.

VARIETY or SEEDLING	Mat.	PRODUCTION INDICES: Total yield, cwt/A	Size A yield, cwt/A	Size A yield, %	Size B yield, cwt/A	Bakers yield, cwt/A	QUALITY & CHIP INDICES: Spec. grav.	Total solids %	Chip color
CAMBRIA COUNTY (central)									
8 NW-8	L	399	353	58	169	37	1.084	21.8	6.5
8 OT-2	L	363	342	72	100	59	1.087	22.4	7.0
Kennebec	L	352	334	73	93	43	1.075	20.2	7.3
AK37-19	L	349	317	56	152	41	1.089	22.8	6.0
8 EI-2	M	346	324	65	121	20	1.070	19.2	5.5
Snowchip	L	341	316	64	116	48	1.074	20.0	5.7
AK11-68-4-71	L	334	306	61	131	20	1.086	22.2	7.5
6 CX-6	L	324	303	65	112	30	1.077	20.6	6.2
8 GV-5	L	323	304	70	82	47	1.091	23.1	6.5
BR7088-18	E	307	285	66	102	40	1.080	21.2	5.5
8 SA-1	L	305	298	89	34	130	1.078	20.8	4.8
B6987-56	L	302	284	74	76	80	1.081	21.3	5.8
Norchip	M	294	261	46	156	13	1.075	20.2	5.8
Penn 71	L	284	273	77	60	51	1.072	19.6	6.8
8 ER-12	M	270	242	47	143	30	1.076	20.4	5.8
BR6864-9	M	267	239	52	127	18	1.066	18.5	7.1
8 NO-3	L	263	252	76	64	44	1.078	20.8	5.8
Katahdin	L	250	238	67	81	26	1.069	19.0	7.4
BR7093-20	M	247	234	64	86	30	1.076	20.4	5.0
BR6863-3	E	240	226	68	74	30	1.076	20.4	4.5
Monona	E	239	216	47	127	8	1.064	18.1	5.1
8 MS-4	L	237	228	74	62	47	1.081	21.3	5.3
8 PO-3	L	221	203	64	80	26	1.085	22.0	6.1
Norland	E	216	194	43	122	2	1.061	17.6	7.0
NC64C2-3	L	210	193	58	86	15	1.062	17.8	6.1
Co. Ave.		291	271	64	102	37	1.077	20.6	6.1
L.S.D. (.05)		62	61	9	21	26	0.004	----	0.7

Pennsylvania Table 2. (Continued)

VARIETY or SEEDLING	Mat.	PRODUCTION INDICES: Total yield, cwt/A	Size A yield, cwt/A	Size A yield, %	Size B yield, cwt/A	Bakers yield, cwt/A	QUALITY & CHIP INDICES: Spec. grav.	Total solids, %	Chip color
LANCASTER COUNTY (southeast)									
AK11-68-4-71	L	462	412	58	196	12	1.074	20.0	5.8
6 CX-6	L	456	426	68	145	41	1.080	21.2	6.5
B6987-56	L	440	414	73	116	119	1.093	23.5	6.0
8 NW-8	L	429	376	52	203	16	1.085	22.0	6.5
Katahdin	L	428	399	68	136	48	1.076	20.4	7.0
Penn 71	L	424	406	72	117	31	1.078	20.8	6.5
Kennebec	L	410	378	59	167	16	1.078	20.8	6.2
8 ER-12	M	404	383	70	120	62	1.082	21.5	5.8
Norchip	M	403	369	54	185	16	1.083	21.7	6.8
8 NO-3	L	402	366	58	167	15	1.086	22.2	6.0
Snowchip	L	401	372	63	146	48	1.076	20.4	6.5
NC64C2-3	L	395	365	63	144	50	1.067	18.7	6.0
8 GV-5	L	393	365	68	123	56	1.089	22.8	6.0
BR6863-3	E	392	372	72	108	36	1.090	23.0	6.8
8 SA-1	L	388	374	82	69	90	1.078	20.8	6.2
8 OT-2	L	386	355	60	153	32	1.086	22.2	7.0
AK37-19	L	381	348	60	152	39	1.103	25.4	6.2
8 EI-2	M	370	338	54	172	19	1.080	21.2	6.2
8 MS-4	L	356	332	65	124	39	1.087	22.4	5.5
Monona	E	342	306	50	172	9	1.065	18.3	6.0
BR7088-18	E	332	302	54	150	13	1.090	23.0	5.8
Norland	E	327	296	44	180	6	1.059	17.2	8.5
BR7093-20	M	317	300	76	76	80	1.084	21.8	6.0
8 PO-3	L	313	286	57	135	14	1.079	21.0	6.0
BR6864-9	M	288	246	39	176	4	1.075	20.2	6.0
Co. Ave.		386	355	62	145	36	1.081	21.3	6.3
L.S.D. (.05)		66	63	7	31	25	0.004	----	0.8

Pennsylvania Table 2. (Continued)

VARIETY or SEEDLING	Mat.	PRODUCTION INDICES: Total yield, cwt/A	Size A yield, cwt/A	Size A yield, %	Size B yield, cwt/A	Bakers yield, cwt/A	QUALITY & CHIP INDICES: Spec. grav.	Total solids, %	Chip color
SCHUYKILL COUNTY (east)									
B6987-56	L	609	590	84	100	264	1.084	21.8	5.8
NC64C2-3	L	605	578	80	117	243	1.064	18.1	5.9
AK11-68-4-71	L	602	574	81	113	122	1.080	21.2	8.0
8 EI-2	M	591	560	77	136	106	1.070	19.2	7.0
Snowchip	L	589	563	84	90	272	1.071	19.4	6.3
BR7088-18	E	580	565	85	87	179	1.084	21.8	5.1
Kennebec	L	578	553	82	101	220	1.072	19.6	7.1
Katahdin	L	564	549	89	62	298	1.064	18.1	7.2
Penn 71	L	564	554	90	58	266	1.070	19.2	6.2
AK37-19	L	554	527	78	122	172	1.094	23.7	6.7
BR6864-9	M	554	517	74	142	118	1.071	19.4	7.4
8 OT-2	L	550	520	76	135	148	1.079	21.0	7.0
8 GV-5	L	540	511	80	110	138	1.082	21.5	6.1
8 MS-4	L	538	520	85	77	258	1.081	21.3	6.9
6 CX-6	L	528	500	79	111	128	1.075	20.2	6.4
8 SA-1	L	500	491	88	55	265	1.073	19.8	5.8
8 NW-8	L	484	444	64	174	34	1.083	21.7	6.2
Norchip	M	475	437	66	162	72	1.071	19.4	6.4
8 ER-12	M	471	451	79	99	171	1.073	19.8	5.5
8 NO-3	L	470	450	79	97	130	1.077	20.6	6.8
BR6863-3	E	463	450	88	54	214	1.079	21.0	6.2
Monona	E	439	415	71	128	78	1.061	17.6	5.5
8 PO-3	L	396	372	70	107	100	1.073	19.8	7.4
BR7093-20	M	378	367	83	64	156	1.065	18.3	6.5
Norland	E	334	316	72	93	38	1.052	15.9	8.2
Co. Ave.		518	494	79	104	167	1.074	20.0	6.5
L.S.D (.05)		90	90	6	21	79	0.004	-----	0.9

Pennsylvania Table 3. Origin, and tuber characteristics after grading in Pennsylvania, 1975

Variety or Seedling No.	Origin	Skin Color[1/]	Shape[2/]	Eye Depth[3/]
AK37-19	USDA, Alaska A.E.S.	Cr B	El-Ob	M
AK11-68-4-71	USDA, Alaska A.E.S.	B	Cyl	S
B6987-56	USDA	Ru	El-Ro	S
BR6863-3	USDA, Campbell Inst.	Cr B	El-Ro	S
BR6864-9	USDA, Campbell Inst.	Ru	El-Ro	S
BR7088-18	USDA, Campbell Inst.	B	El-Ro	S
BR7093-20	USDA, Campbell Inst.	Cr B	El-Ro	M
NC64C2-3	N.C.A.E.S.	Cr B	El-Ob	M
6 CX-6	Pa. A.E.S., Plt. Path.	Cr B	El-Ob	M
8 EI-2	Pa. A.E.S., Plt. Path.	Cr B	El	S
8 ER-12	Pa. A.E.S., Plt. Path.	B	El-Ro	M
8 GV-5	Pa. A.E.S., Plt. Path.	B	El-Ob	S
8 MS-4	Pa. A.E.S., Plt. Path.	Cr B	El-Ro	M
8 NO-3	Pa. A.E.S., Plt. Path.	Ru	El-Ro	D
8 NW-8	Pa. A.E.S., Plt. Path.	Cr B	El-Ob	M
8 OT-2	Pa. A.E.S., Plt. Path.	B	Ro-El	S
8 PO-3	Pa. A.E.S., Plt. Path.	Ru	El-Ob	D
8 SA-1	Pa. A.E.S., Plt. Path.	Cr B	El	M
Katahdin	USDA	Cr B	El-Ro	S
Kennebec	USDA	Cr B	El-Ob	S
Monona	Frito-Lay	Cr B	Ob	M
Norchip	N.D.A.E.S.	Cr B	Ro-Ob	S
Norland	N.D.A.E.S.	Re	El-Ob	S
Penn 71	Pa. A.E.S., Plt. Path.	Cr B	El-Ro	M
Snowchip	USDA, Alaska A.E.S.	Cr B	El-Ro	M

1/ B-buff, Cr B-creamy buff, Re-red, Ru-russet

2/ El-elliptical, Ob-oblong, Ro-round, Cyl-cylindrical

3/ S-shallow, M-medium, D-deep

Pennsylvania Table 4. Tuber characteristics after grading at three locations in Pennsylvania, 1975.

Variety or Seedling No.	Cambria Co. (central)	Lancaster Co. (southeast)	Schuylkill Co. (east)
AK37-19	some shatter bruise, fair shape	some russet, cracks, rough	fair appearance
AK11-68-4-71	some rhizoctonia, fair shape, some russet	some russet, rough	rough
B6987-56	some rhizoctonia	attractive	attractive
BR6863-3	some russet	some russet, attractive	some russet
BR6864-9	cracks	some rhizoctonia	cuts
BR7088-18	fair shape	some russet, rhizoctonia	some russet, cracks
BR7093-20	cracks, deep eyes on bud end	some rhizoctonia, rough	some russet, few shattered
NC64C2-3	cracks, breakdown, rough	some rhizoctonia, rough, most tubers sprouted on bud end	cuts, knobs, growth cracks
6 CX-6	shatter bruise, some russet	cracks	shatter bruises, rough
8 EI-2	some shatter bruise, russet	some russet, attractive	attractive
8 ER-12	rough	some russet, fair shape	some russet, fair shape
8 GV-5	cracks, rough	shatter bruises, very rough	some russet, flat, rough
8 MS-4	shatter bruise	some russet, rough	some russet, few shattered
8 NO-3	shatter bruise	some cracks	some shattered
8 NW-8	some russet, attractive	rough, few tubers sprouted	cuts
8 OT-2	some russet, very attractive	some rhizoctonia, attractive	some russet
8 PO-3	some shatter bruise	few cracks, very rough	shatter bruises
8 SA-1	cracks, some russet	some russet, some rhizoctonia	shatter bruises, rough

Pennsylvania Table 4. (Continued)

Variety or Seedling No.	Cambria Co. (central)	Lancaster Co. (southeast)	Schuylkill Co. (east)
Katahdin	rough, breakdown	some cracks	fair appearance
Kennebec	fair shape	cracks, rough	rough
Monona	few rough	cracks, cuts, rough	cracks, cuts, rough
Penn 71	some flat, misshapen	some flat, fair shape	rough
Snowchip	some russet, fair shape	some russet, attractive	rough

Irish Potato Variety Trial (Spring 1975)

Clemson University Truck Experiment Station
Charleston, S. C.

W. R. Sitterly

Purpose: To find Irish potato varieties adaptable to coastal South Carolina.

Procedure: On Feb. 10, a field of fine sandy loam was fertilized with 800 lbs/A of granular 10-10-10. On Feb. 26, the area was planted with test entries, treated with Eptam at 2 lbs/A broadcast, and bedded. The soil was very wet at planting and could just be worked. The plot design was a randomized block with 4 replicates.

On March 24 the crop was cultivated and laid-by without the customary drag-off weeding.

Results: The season was extremely wet and many seed pieces and tubers rotted in the ground, and a lot of feeder roots rotted. Yields were generally low.

Table 1. Characteristics of entries in the Irish potato variety trial. Spring 1975.

Entry	Yield (cwt/A)	Maturity	Tuber shape	Dry Matter %	Early blight
B 7629-1	60	M	Oval	19.9	Very resistant
B 7649-5	24	E	Oval	18.1	Susceptible
B 6969-9	24	E	Oval-elongate	16.9	Susceptible
B 6532-4	18	M	Oval	20.4	Resistant
LaChipper	42	M	Oval	18.8	Susceptible
Cascade	72	ML	Oval-elong.	18.9	Very susc.
B 6951-5	41	M	Oval	19.4	Resistant
B 6495-20	27	L	Oval	21.4	Susceptible
B 6516-20	27	M	Elongate	21.4	Resistant
B 7139-4	60	ML	Oval	20.8	Resistant
Cobbler	57	M	Oval	19.7	Susceptible

As shown in Table 1, Cascade produced the highest yield, followed by B 7629-1 and B 7139-4. Two of these are medium late and may have sized tubers after the heaviest rainfall periods had occurred.

The earliest maturing items in this test were B 7649-5 and B 6969-9.

B 6945-20 and B 6516-20 produced the highest dry matter content, followed closely by B 7139-4 and B 6532-4.

B 7629-1 displayed the highest resistance to early blight. B 6532-4, B 6951-5, B 6516-20, and B 7139-4 were also resistant to early blight.

Conclusions:

In this test, B 7139-4 and B 7629-1 appeared to be equally satisfactory and rated as best in test. The early blight resistance of B 7639-1 was excellent, while the overall performance of B 7139-4 in all categories was always good.

TEXAS

J. Creighton Miller, Jr. and Douglas G. Smallwood

Variety Development and Testing

Seedling Program. Approximately 12,000 first year seedlings, representing 69 families, were grown near Hereford in 1975. Seedlings were provided by Dr. Robert H. Johansen of North Dakota State University and Dr. Florian I. Lauer of the University of Minnesota. One hundred two selections were made out of this material. As in 1973 and 1974, one half of the tubers from each selected clone was sent to either North Dakota or Minnesota for virus indexing, observation, and seed increase. The other half will be grown and evaluated in Texas in 1976, as second year selections. Four of the 89 NDTX selections made in Texas in 1973 are being advanced in 1976, based on their performance in North Dakota and Texas in 1974 and 1975. Based on similar performance, approximately 40 of the 160, 1974 NDTX selections have been kept for observation again in both states in 1976. The newly initiated Texas winter crossing program was very successful, and approximately 13,000 seedlings were grown in the greenhouse this past fall.

Adaptation Trials. Some 326 entries were grown in replicated and nonreplicated trials at three locations in West Texas. Not all entries were included at each location. Only the results of replicated advanced selection and variety trials at Hereford, Lubbock and Olton are included herein. In the variety and advanced selection trials (Tables 1, 5 & 7) the standard varieties presently grown in the area were the outstanding entries. Among the red varieties, Red LaSoda, Norland and Viking were high yielding. Norgold Russet was again the outstanding russet entry. Among the white varieties, Kennebec, Monona and Cascade were high yielding at one or more locations. Among the advanced selections, ND 8888-2 was outstanding. The advanced selections La 11-118 and La 01-70 were high yielding but lacked tuber type. The performance of Centennial Russet was better than in previous years. Several WC selections were promising at one or more locations. The selection WC 316-1, although not the highest yielding, was outstanding in tuber type and size.

In the North Dakota advanced selection trials (Tables 2, 6 & 8) ND 8297-1, ND 8891-3 and ND 8751-16 were high yielding, but tuber size was comparatively small. The russet selections ND 9157-10 Russ and ND 8947-2 Russ yielded quite well, but exhibited rather poor tuber type. The red selection ND 9403-16 R had high yield and good tuber type. Unlike many of the other red entries, this selection exhibited excellent color when grown in the sandy soils near Olton.

The Idaho advanced selections (Table 3) which showed promise based on yield and/or tuber type included A 68599-1, NDA 8694-3, A 66107-12, A 6680-5, A 66110-7, A 69827-10, A 66107-101, A 69424-1, and NDA 8856-11. In general, this material was very vigorous and late maturing.

The North Dakota-Texas advanced selection trial (Table 4) was composed of selections made in Texas in 1973. Based on their performance in this trial and in North Dakota, NDTX 9522-1 R, NDTX 9523-1 R, NDTX 9443-3, and NDTX 9518-1 Russ will be advanced in 1976.

Texas Table 1. Total yield, percent of tubers over 4 ounces, average weight per tuber, specific gravity, vigor, and maturity for 33 potato varieties or selections grown near Hereford, Texas - 1975.

Variety or selection	Total yield cwt/A.	% of tubers over 4 oz.	Average weight/ tuber in oz.	Specific gravity	Vigor[1/]	Maturity[2/]
Red LaSoda	506.0	84.3	7.7	1.066	4.5	2.3
Red LaSoda Strain 10	505.7	84.9	6.9	1.069	3.5	3.3
Norland	486.4	85.7	5.9	1.076	4.5	3.0
Viking	459.8	92.2	9.8	1.072	3.5	3.0
La 11-118	458.0	75.9	5.0	1.068	4.0	1.0
ND 8888-2	443.0	78.5	5.3	1.076	3.8	3.0
La 01-70	411.4	79.2	5.1	1.076	3.8	1.0
Minn 4929	406.4	86.9	6.1	1.065	3.5	3.0
Norgold "M"	402.3	77.1	5.6	1.066	3.8	3.3
WC 304-4	393.8	83.0	6.9	1.066	3.0	3.5
WC 314-2	378.5	79.4	5.6	1.080	3.8	3.0
La 11-24	377.0	84.5	5.6	1.075	3.3	3.0
WC 230-14	368.5	68.9	5.1	1.055	3.5	3.3
Surchip	367.4	76.7	5.1	1.070	3.0	3.0
WC 285-146	359.2	78.3	4.8	1.073	3.5	3.0
FL-460	349.8	79.1	4.8	1.065	3.5	3.8
Minn 4858	347.0	88.1	5.8	1.081	3.0	3.5
Bison	346.7	83.8	5.0	1.073	3.5	3.0
WC 316-1	337.4	89.9	7.4	1.080	3.0	2.5
Norgold Russet	333.5	80.4	5.0	1.073	3.3	4.6
ND 8913-4 Russ	331.7	76.7	4.6	1.080	3.3	4.0
FL-2	328.7	76.7	5.9	1.078	3.6	3.0
ND 9109-8R	326.9	77.8	5.0	1.065	3.3	3.5
B 7813-5	325.6	77.6	5.0	1.085	3.0	3.3
Kennebec	316.9	77.6	6.7	1.066	4.0	1.8
Monona	309.5	82.7	7.0	1.065	3.0	3.0
B 7583-6	286.2	87.0	5.8	1.083	3.0	1.5
FL-162	279.2	80.2	5.4	1.070	3.5	2.8
Bounty	275.1	82.9	4.8	1.063	3.0	4.4
Minn 5072	272.2	85.5	5.4	1.068	3.0	3.0
B 7676-2	261.4	86.7	4.8	1.079	2.0	3.0
WC 285-18	233.3	60.9	3.5	1.073	3.0	2.0
B 7678-13	202.6	84.7	5.0	1.066	2.4	4.1
Mean	357.1	81.0	5.7	1.072	3.4	3.3
L.S.D. (.05)	58.7	7.5				

[1/] 1 = poor or weak, 2 = fair, 3 = medium, 4 = vigorous, 5 = very vigorous.

[2/] 1 = very late, 2 = late, 3 = medium, 4 = early, 5 = very early.

Texas Table 2. Total yield, average number of tubers per plant, average weight per tuber, specific gravity, vigor, maturity, and general tuber rating for 22 North Dakota advanced selections and 6 check varieties grown near Hereford, Texas - 1975.

Selection or check variety	Total yield cwt/A.	Average number tubers/ plant	Average weight/ tuber in oz.	Specific gravity	Vigor[1/]	Maturity[2/]	General[3/] tuber rating
ND 8297-1	598.5	13.6	5.6	1.066	3.3	3.3	2.8
Red LaSoda	581.6	8.8	8.1	1.060	4.5	2.0	2.8
Cascade	555.4	9.3	7.3	1.071	3.8	3.2	3.0
ND 8891-3	495.3	11.6	5.2	1.068	3.8	2.8	3.5
ND 9403-16 R	490.1	8.8	6.8	1.067	3.3	3.0	3.0
Viking	477.0	4.2	13.9	1.064	3.5	3.0	3.0
ND 9157-10 Russ	466.5	10.7	5.3	1.075	3.5	2.3	2.0
ND 8751-16	435.2	13.7	3.9	1.075	3.0	3.0	2.5
Chieftan	413.0	8.3	6.1	1.064	3.8	2.5	2.8
ND 8947-2 Russ	402.5	7.5	6.7	1.059	3.0	3.3	1.5
Norgold Russet	379.0	6.6	7.1	1.071	3.0	4.0	3.0
ND 8850-2	375.1	12.3	4.1	1.066	3.3	3.0	3.0
ND 8888-1	359.4	6.8	7.3	1.063	3.5	2.5	2.8
ND 7715-7 R	354.2	6.1	7.2	1.062	3.0	3.0	2.5
ND 7710-5	346.3	6.1	7.3	1.069	2.5	3.0	3.5
Sioux	343.7	7.7	6.4	1.085	3.3	3.3	2.5
ND 8742-2	321.5	5.8	6.8	1.062	3.0	3.0	2.5
ND 7824-1 R	316.3	6.8	5.7	1.070	2.8	2.5	2.8
ND 9004-1 Russ	301.9	9.6	4.4	1.063	3.0	2.0	1.5
ND 7878-1	277.1	5.7	6.0	1.078	3.3	3.5	3.0
ND 9130-1 Russ	264.0	4.6	7.0	1.070	3.0	3.5	2.0
ND 7642-2 Russ	253.5	5.8	5.4	1.071	2.8	3.3	2.5
ND 9403-21 R	252.2	5.4	5.8	1.072	2.8	3.8	3.0
ND 9086-1	193.4	5.6	4.2	1.057	2.8	3.0	1.5
ND 9403-19 R	193.4	2.6	9.1	1.078	2.5	2.5	2.8
ND 8767-10 R	139.8	3.4	5.0	1.080	3.0	3.0	2.5
ND 9404-6 R	132.0	3.9	4.2	1.072	3.0	3.8	2.0
ND 8914-5 Russ	100.7	3.1	4.0	1.064	3.0	4.0	2.5
Mean	350.6	7.3	6.3	1.069	3.2	2.9	2.6
L.S.D. (.05)	106.3	2.9	1.9				

[1/] 1 = poor or weak, 2 = fair, 3 = medium, 4 = vigorous, 5 = very vigorous.

[2/] 1 = very late, 2 = late, 3 = medium, 4 = early, 5 = very early.

[3/] 1 = ppor to 5 = excellent.

Texas Table 3. Total yield, average number of tubers per plant, average weight per tuber, specific gravity, vigor, maturity, and general tuber rating for 28 Idaho or NDA advnaced selections and 3 check varieties grown near Hereford, Texas - 1975.

Selection or check variety	Total yield cwt/A.	Average number tubers/ plant	Average weight/ tuber in oz.	Specific gravity	Vigor[1/]	Maturity[2/]	General[3/] tuber rating
Red LaSoda	551.6	8.8	8.1	1.059	3.0	2.0	2.8
A 68587-3	480.9	7.4	8.0	1.065	3.0	2.3	1.0
Viking	471.8	4.6	12.6	1.060	3.0	3.0	3.0
NDA 9269-2	440.4	7.0	7.7	1.060	3.5	2.5	2.0
A 68599-1	409.1	6.5	7.7	1.076	2.8	2.0	2.0
NDA 7697-2	397.3	7.0	7.0	1.059	3.5	1.5	1.5
NDA 8694-3	364.6	6.1	7.6	1.065	3.0	3.0	2.8
A 66107-12	362.0	6.3	7.0	1.072	2.8	3.3	3.5
Norgold Russet	360.7	6.6	7.0	1.067	3.0	4.0	3.0
A 68683-13	348.9	7.0	6.2	1.061	3.0	1.5	1.0
A 6789-7	342.4	5.5	7.7	1.055	3.0	1.3	1.0
A 6673-1	338.5	6.3	6.7	1.056	3.0	2.0	1.0
A 6680-5	337.1	5.5	7.5	1.062	2.8	3.3	2.8
A 68710-5	334.6	4.0	10.2	1.060	3.0	2.5	1.0
A 68709-2	334.6	5.8	7.1	1.066	3.0	2.5	2.5
A 66110-7	332.0	5.8	7.0	1.074	3.0	3.0	3.5
A 68588-16	332.0	7.0	6.2	1.056	3.5	1.5	2.0
A 69827-10	326.7	4.6	8.7	1.065	3.0	1.5	2.8
A 68721-1	320.2	8.5	4.9	1.058	3.0	2.0	1.8
A 66107-101	318.9	6.4	6.2	1.075	3.0	3.3	3.5
NDA 8451-3	309.8	5.2	7.3	1.064	2.5	3.0	1.0
A 701004-2	303.2	6.0	6.1	1.062	3.5	1.0	1.0
A 70768-1	294.0	5.2	7.0	1.067	3.5	1.8	1.0
A 69424-1	291.5	8.8	4.1	1.077	4.5	1.0	3.5
A 67341-4	290.1	4.5	8.6	1.058	2.5	1.5	2.5
NDA 7746-1	249.6	4.0	8.8	1.071	2.0	3.3	3.5
NDA 8922-3	243.1	5.2	6.5	1.059	2.3	3.0	1.8
A 66110-23	228.7	4.2	6.9	1.066	3.5	2.0	1.0
NDA 8856-11	226.1	3.9	7.1	1.077	2.8	3.3	3.5
A 66110-39	214.4	5.2	5.1	1.065	3.5	1.3	1.0
A 66110-1	188.2	7.8	3.0	1.062	3.0	2.0	2.5
Mean	333.7	6.1	7.1	1.065	3.1	2.3	2.2
L.S.D. (.05)	99.9	2.3	2.5				

[1/] 1 = poor or weak, 2 = fair, 3 = medium, 4 = vigorous, 5 = very vigorous.

[2/] 1 = very late, 2 = late, 3 = medium, 4 = early, 5 = very early.

[3/] 1 = poor to 5 = excellent.

Texas Table 4. Parentage, total yield, average number of tubers per plant, average weight per tuber, specific gravity, tuber type and general tuber rating of 38 North Dakota-Texas selections and 2 check varieties of potatoes grown near Hereford, Texas - 1975.

Selection or check variety	Parentage	Total yield cwt/A	Average number tubers/ Plant	Average weight/ tuber in oz	Specific gravity	Tuber type	General[1/] tuber rating
Red LaSoda		590.7	8.6	8.4	1.060	Oblong	2.8
NDTX 9521-2 R	ND 8104-3 R x ND 8803-5 R	507.1	11.7	5.3	1.064	Oblong	2.5
NDTX 9519-1 R	ND 7930-3 R x ND 8808-1 R	465.2	10.3	5.5	1.065	Oblong	2.8
NDTX 9521-1 R	ND 8104-3 R x ND 8803-5 R	453.5	9.7	5.7	1.059	Oblong	2.8
NDTX 9449-8 Ru	B 7196-4 x ND 8724-3 Russ	448.3	8.6	6.4	1.064	Oblong	1.0
NDTX 9455-4	B 7196-36 x ND 7003-2 Russ	435.2	8.7	6.2	1.059	Oblong	2.0
NDTX 9580-5 R	ND 8691-15 R x ND 8843-12 R	435.2	6.7	8.0	1.060	Round	2.0
NDTX 9523-1 R	ND 8105-1 R x ND 8845-12 R	433.9	5.3	10.2	1.057	Round	3.5
NDTX 9550-2	ND 8464-1 Russ x Wash. 245-2	414.2	7.0	7.3	1.071	Long	1.8
NDTX 9449-5 Ru	B 7196-4 x ND 8724-3 Russ	410.3	11.3	4.5	1.067	Oblong	2.0
NDTX 9432-2 Ru	Wash. 245-2 x ND 7755-3 Russ	406.4	9.0	5.6	1.071	Oblong	2.0
NDTX 9580-2 R	ND 8691-15 R x ND 8843-12 R	394.7	10.9	5.1	1.062	Round	2.5
Norgold Russet		371.1	6.1	7.6	1.067	Oblong	3.0
NDTX 9519-2 R	ND 7930-3 R x ND 8808-1 R	365.9	7.2	7.0	1.059	Oblong	2.8
NDTX 9570-1 Ru	ND 8636-3 Russ x Wash. 245-2	363.3	8.2	5.4	1.076	Oblong	2.0
NDTX 9443-3	B 7147-5 x ND 6993-13 Russ	341.1	7.8	6.2	1.078	Oblong	2.5
NDTX 9448-1 Ru	B 7196-4 x Wash. 245-2	334.6	7.7	5.3	1.072	Oblong	2.0
NDTX 9434-1 Ru	Wash. 245-2 x ND 8827-1 Russ	333.2	7.8	5.2	1.088	Oblong	2.5
NDTX 9455-1 Ru	B 7196-36 x ND 7003-2 Russ	320.2	5.7	7.0	1.069	Long	1.0
NDTX 9449-3	B 7196-4 x ND 8724-3 Russ	317.6	8.0	4.9	1.065	Oblong	2.0
NDTX 9456-1 Ru	B 7196-40 x Wash. 245-2	301.9	8.1	4.6	1.068	Oblong	2.0
NDTX 9518-1 Ru	ND 7755-3 Russ x A 59197-5	294.0	3.4	10.7	1.066	Oblong	2.0
NDTX 9451-1 Ru	B 7196-27 x Wash. 245-2	266.6	5.6	5.9	1.066	Long	1.0
NDTX 9550-3 Ru	ND 8464-1 Russ x Wash. 245-2	264.0	6.6	4.9	1.079	Oblong	1.8
NDTX 9530-3 Ru	ND 8177-9 Russ x B 7157-9	255.0	7.8	4.5	1.068	Oblong	2.5
NDTX 9443-5 Ru	B 7147-5 x ND 6993-13 Russ	253.5	4.2	7.4	1.062	Oblong	2.0
NDTX 9443-7	B 7147-5 x ND 6993-13 Russ	232.7	7.4	3.9	1.061	Oblong	1.0
NDTX 9446-3 Ru	B 7188-2 x ND 8134-2 Russ	230.0	5.6	5.0	1.061	Oblong	2.0

Continued

Texas Table 4. Continued

Selection or check variety	Parentage	Total yield cwt/A	Average number tubers/ plant	Average weight/ tuber in oz	Specific gravity	Tuber type	General[1/] tuber rating
NDTX 9459-2 Ru	B 7196-40 x ND 8827-1 Russ	224.8	7.9	3.5	1.072	Oblong	2.8
NDTX 9449-2 Ru	B 7196-4 x ND 8724-3 Russ	223.5	6.0	6.0	1.072	Oblong	2.8
NDTX 9445-1 Ru	B 7157-9 x ND 8827-1 Russ	218.3	4.7	5.7	1.080	Oblong	2.5
NDTX 9551-1 Ru	8466-1 Russ x Wash. 245-2	190.8	5.7	4.5	1.079	Oblong	2.8
NDTX 9449-4 Ru	B 7196-4 x ND 8724-3 Russ	186.9	5.6	4.2	1.068	Oblong	2.0
NDTX 9507-1 Ru	ND 7233-9 Russ x Wash. 245-2	180.4	7.6	2.9	1.063	Oblong	2.0
NDTX 9463-4 Ru	B 7196-101 x ND 8134-2 Russ	177.8	4.0	5.5	1.072	Oblong	1.0
NDTX 9460-2 Ru	B 7196-77 x Wash. 245-2	173.8	3.7	6.6	1.070	Long	1.0
NDTX 9456-2 Ru	B 7196-40 x Wash. 245-2	172.5	9.6	2.2	1.059	Oblong	2.0
NDTX 9530-2 Ru	ND 8177-9 Russ x B 7157-9	163.4	4.1	5.0	1.071	Oblong	2.5
NDTX 9443-6 Ru	B 7147-5 x ND 6993-13 Russ	151.6	2.0	9.3	1.065	Oblong	1.8
NDTX 9432-1 Ru	Wash. 245-2 x ND 7755-3 Russ	137.3	4.3	3.9	1.069	Oblong	2.8
Mean		311.0	7.0	5.8	1.068		2.1
L.S.D. (.05)		71.9	2.8	2.5			

[1/] 1 = poor to 5 = excellent

Texas Table 5. Total yield, percent of tubers over 4 ounces, average weight per tuber, specific gravity, vigor, and maturity for 32 varieties or selections grown near Olton, Texas - 1975.

Variety or selection	Total yield cwt/A	% of tubers over 4 oz	Average weight/ tuber in oz	Specific gravity	Vigor[1/]	Maturity[2/]
Red LaSoda	537.2	82.6	6.1	1.055	3.8	2.0
Norland	497.7	74.7	3.8	1.062	3.3	2.3
La 11-118	489.3	71.2	4.2	1.056	3.7	1.5
Red LaSoda Strain 10	457.7	82.3	5.6	1.057	2.9	3.2
Kennebec	410.3	67.9	5.4	1.061	3.6	2.7
Monana	406.0	74.6	5.3	1.053	2.7	3.5
Viking	394.7	79.5	6.4	1.060	3.5	2.6
FL-460	393.8	62.0	3.7	1.057	3.3	2.6
ND 8888-2	389.7	66.7	4.5	1.059	3.0	2.8
Norgold Russet "M"	388.0	65.6	4.3	1.060	3.1	2.8
La 01-70	380.7	72.4	3.7	1.071	3.2	2.9
ND 9109-8 R	377.8	70.0	3.8	1.057	3.3	2.3
Minn 4929	369.7	75.4	5.9	1.051	3.0	2.3
FL-162	367.9	62.4	4.0	1.060	3.6	1.3
Surchip	365.9	68.2	4.2	1.066	2.8	2.8
WC 304-4	360.1	65.8	3.8	1.050	2.8	3.5
B 7583-6	339.5	70.3	4.3	1.072	3.3	2.0
WC 230-14	338.3	37.5	2.6	1.048	3.3	2.8
Norgold Russet	326.4	66.3	3.7	1.060	2.7	4.5
WC 285-146	319.4	58.9	3.0	1.061	3.5	2.8
Minn 4858	311.3	70.5	4.6	1.056	2.7	3.2
La 11-24	307.5	70.3	3.8	1.064	2.8	3.0
ND 8913-4 Russ	296.5	61.9	3.5	1.062	2.8	3.5
Bounty	295.0	46.9	2.8	1.054	2.8	3.5
WC 314-2	268.0	71.8	4.0	1.068	3.2	3.0
WC 316-1	265.7	74.0	4.0	1.067	2.8	3.6
Minn 5072	262.8	64.5	3.5	1.055	2.7	3.5
Bison	246.8	83.8	4.0	1.062	2.6	2.7
B 7813-5	238.4	60.4	3.8	1.066	2.8	3.5
B 7678-13	236.7	74.0	3.8	1.059	2.8	3.5
WC 285-18	215.8	51.9	3.0	1.064	3.7	2.0
B 7676-2	209.7	67.7	3.4	1.064	2.5	3.5
Mean	345.8	67.9	4.1	1.060	3.1	2.9
L.S.D. (.05)	63.4	9.1				

[1/] 1 = poor or weak, 2 = fair, 3 = medium, 4 = vigorous, 5 = very vigorous.

[2/] 1 = very late, 2 = late, 3 = medium, 4 = early, 5 = very early.

Texas Table 6. Total yield, average number of tubers per plant, average weight per tuber, specific gravity, vigor, maturity, and general tuber rating for 20 North Dakota advanced selections and 7 check varieties grown near Olton, Texas - 1975.

Selection or check variety	Total yield cwt/A	Average number tubers/ plant	Average weight/ tuber in oz.	Specific gravity	Vigor[1/]	Maturity[2/]	General[3/] tuber rating
Red LaSoda	572.4	8.8	8.1	1.052	3.9	1.0	2.0
ND 8891-3	475.7	12.6	4.6	1.064	3.5	2.5	2.5
ND 9403-16 R	457.4	10.1	5.6	1.062	3.0	2.5	2.8
ND 8888-1	443.0	13.0	5.3	1.064	3.5	2.0	2.0
Cascade	440.4	9.4	5.7	1.070	3.5	2.0	3.0
ND 8297-1	432.6	10.8	4.9	1.057	3.0	2.8	2.5
Viking	403.8	6.1	8.1	1.056	3.5	2.5	4.0
ND 8850-2	388.1	12.1	4.0	1.054	2.8	3.2	2.5
Norgold Russet	359.4	10.7	4.1	1.064	3.0	3.8	4.5
ND 8751-16	345.0	12.5	3.4	1.069	2.8	2.3	2.5
FL-2	342.4	7.7	6.8	1.068	3.5	3.0	2.8
Chieftan	331.9	8.0	5.1	1.062	2.8	2.9	3.5
ND 9403-19 R	316.3	8.6	4.5	1.075	3.0	3.0	2.5
Sioux	309.7	7.0	5.4	1.070	2.9	2.9	2.0
ND 7878-1	301.9	7.9	5.2	1.058	2.8	2.8	3.0
ND 9157-10 Russ	295.3	11.5	3.5	1.066	3.3	1.5	2.0
ND 8742-2	287.5	5.5	6.4	1.057	2.7	2.8	3.0
ND 8767-10 R	286.2	7.1	5.0	1.063	2.8	3.0	2.5
ND 7710-5	266.6	5.0	6.9	1.061	2.5	2.8	3.0
ND 9086-1	257.4	11.5	3.1	1.050	2.5	3.0	1.8
ND 8947-2 Russ	236.5	7.4	4.0	1.046	3.0	3.5	1.5
ND 9004-1 Russ	228.7	12.2	2.3	1.061	3.0	2.0	2.0
ND 9403-21 R	215.6	8.4	3.1	1.058	2.7	3.5	2.5
ND 7642-2 Russ	205.2	4.7	5.3	1.056	2.8	3.2	2.5
ND 9404-6 R	196.0	6.8	3.5	1.060	2.7	3.3	2.0
ND 8914-5 Russ	175.1	8.4	2.6	1.053	2.8	4.0	2.8
ND 9130-1 Russ	149.0	5.5	5.4	1.060	2.8	3.3	2.5
Mean	322.9	8.9	4.9	1.061	3.0	2.8	2.6
L.S.D. (.05)	108.1	2.6	1.5				

[1/] 1 = poor or weak, 2 = fair, 3 = medium, 4 = vigorous, 5 = very vigorous.
[2/] 1 = very late, 2 = late, 3 = medium, 4 = early, 5 = very early.
[3/] 1 = poor to 5 = excellent.

Texas Table 7. Total yield, average number of tubers per plant, average weight per tuber, specific gravity, and general tuber rating for 36 varieties or selections grown near Lubbock, Texas - 1975.

Variety or selection	Total yield cwt/A	Average number tubers/ plant	Average weight/ tuber in oz	Specific gravity	General[1/] tuber rating
Norland	550.2	7.8	8.8	1.069	2.5
Red LaSoda Strain 10	546.2	9.2	7.3	1.058	2.8
Red LaSoda	538.4	8.8	7.7	1.059	2.0
Viking	499.2	16.7	3.7	1.061	3.5
ND 9109-8 R	467.9	6.2	9.2	1.055	2.8
Minn 4929	448.2	7.3	7.5	1.051	2.8
Cascade	441.7	8.9	7.1	1.072	3.8
Chieftan	440.4	9.6	5.6	1.065	3.0
ND 8888-2	422.1	7.8	6.7	1.066	2.8
Monona	420.8	7.5	6.9	1.057	3.0
Norgold Russet	411.7	6.8	7.4	1.064	2.8
Kennebec	407.7	7.9	6.4	1.064	2.0
Norgold Russet "M"	406.4	5.2	9.7	1.060	2.8
WC 304-4	403.8	8.7	6.4	1.059	2.8
B 7813-5	398.6	6.3	7.8	1.076	2.8
B 7583-6	382.9	7.1	6.7	1.070	3.0
La 11-118	376.4	4.5	10.3	1.052	3.0
FL-2	360.7	6.8	6.5	1.071	3.0
Sioux	360.7	7.2	6.2	1.074	2.8
Minn 4858	345.0	8.0	6.0	1.069	2.5
FL-162	335.9	5.8	7.5	1.062	2.0
Surchip	329.3	5.8	7.9	1.062	3.0
La 11-24	328.1	8.5	4.8	1.056	2.5
Minn 5072	320.2	7.0	5.6	1.057	2.8
La 01-70	313.7	4.3	9.3	1.068	2.5
WC 316-1	305.8	7.9	5.4	1.062	3.5
ND 8913-4 Russ	300.6	5.7	6.4	1.069	3.5
FL-460	295.4	9.5	4.3	1.058	2.5
Bounty	290.1	8.5	4.2	1.063	2.8
Bison	264.0	4.2	7.7	1.059	2.0
B 7678-13	243.1	6.7	5.0	1.060	2.5
WC 230-14	241.7	5.4	5.7	1.055	2.5
B 7676-2	239.2	5.0	5.9	1.070	2.5
WC 314-2	215.6	5.5	5.2	1.073	2.8
WC 285-146	203.9	4.6	6.3	1.066	2.8
WC 285-18	185.6	6.6	3.4	1.067	2.5
Mean	362.3	6.9	6.9	1.063	2.8
L.S.D. (.05)	125.5	2.8	2.4		

[1/] 1 = poor to 5 = excellent.

Texas Table 8. Total yield, average number of tubers per plant, average tuber weight, specific gravity, skin type, tuber type and general tuber rating for 20 North Dakota advanced selections and 3 check varieties grown near Lubbock, Texas - 1975.

Selection or check variety	Total yield cwt/A	Average number tubers/plant	Average wt/tuber in oz	Specific gravity	Skin type	Tuber type	General[1/] tuber rating
Red LaSoda	607.7	8.2	9.5	1.056	Red	Oblong	2.5
ND 9403-16 R	511.0	6.1	10.3	1.064	Red	Oblong	2.8
ND 8297-1	497.9	8.5	8.1	1.062	White	Round	2.5
ND 8891-3	497.9	9.3	6.7	1.070	White	Oblong	3.0
Viking	465.2	4.2	13.9	1.061	Red	Oblong	3.5
ND 8742-2	462.6	5.1	11.5	1.063	White	Oblong	2.8
ND 7878-1	422.1	8.0	8.1	1.064	White	Oblong	2.8
ND 7710-5	412.9	3.4	14.9	1.062	White	Round	2.8
ND 9157-10 Russ	410.3	11.0	4.6	1.076	Russet	Long	2.0
ND 8850-2	406.4	9.8	5.1	1.065	White	Oblong	2.5
ND 8767-10 R	388.1	6.1	7.8	1.080	Red	Oblong	3.5
Norgold Russet	384.2	7.5	6.4	1.065	Russet	Oblong	3.0
ND 8751-16	359.4	9.3	4.7	1.070	White	Oblong	2.8
ND 8947-2 Russ	335.9	6.2	7.5	1.058	Russet	Long	2.5
ND 9403-19 R	321.5	6.6	8.0	1.073	Red	Oblong	2.8
ND 9004-1 Russ	304.5	8.1	4.6	1.066	Russet	Oblong	2.5
ND 9130-1 Russ	270.5	4.3	7.9	1.066	Russet	Oblong	2.5
ND 8888-1	261.4	3.9	8.1	1.066	White	Oblong	2.5
ND 9086-1	254.8	9.0	3.8	1.053	White	Round	1.0
ND 7642-2 Russ	218.2	4.9	5.5	1.058	Russet	Oblong	2.8
ND 9403-21 R	192.1	4.3	6.2	1.063	Red	Oblong	3.0
ND 8914-5 Russ	189.5	4.7	4.9	1.063	Russet	Oblong	3.0
ND 9404-6 R	180.3	4.2	5.8	1.076	Red	Oblong	2.0
Mean	363.4	6.6	7.6	1.065			2.7
L.S.D. (.05)	149.3	2.9	3.0				

[1/] 1 = poor to 5 = excellent.

VERMONT

By S. C. Wiggans, W. R. Kelly, R. N. Jensen, H. J. Murphy

During 1975, three potato variety trials were conducted in Vermont by the Plant Pest Control Division of the Vermont Department of Agriculture, the Plant and Soil Science Department of the University of Vermont, and the Plant and Soil Sciences Department of the University of Maine. These trials were located at Brandon, Wolcott, and South Burlington, Vermont. There were five replicates in a randomized block at each location. Seed pieces of all varieties were planted by hand. Seed pieces of Nampa and Russet Burbank were spaced 18 inches apart; Targhee was spaced at 16 inches in South Burlington and 12 inches in Wolcott and Brandon. All other varieties were spaced 9 inches apart. These plantings were part of the tri-state cooperative variety trial of the National Potato Breeding Program.

The plots at Brandon were planted May 20, killed August 26, and harvested October 23 (Table 1). Fertilizer was applied at the rate of 144-216-216 per acre. Potatoes were grown in a sandy loam soil. Weed control was good. The season was warm and dry during June and July, but growing conditions were good due to irrigation.

The plots at South Burlington were planted May 28, killed by frost, and harvested October 21 (Table 2). Fertilizer was broadcast at 105-105-105 per acre. Potatoes were planted in a light sandy soil. Initially weed control was good, however, Quackgrass "took over" late in the season. The season was warm and dry during June and July, but growing conditions were good due to irrigation.

Plots at Wolcott were planted May 27, killed September 4, and harvested October 1 (Table 3). Fertilizer was applied at a rate of 136-204-204 per acre. The potatoes were grown in a medium loamy soil. There was adequate moisture even though June and July were warm and dry. There was some mechanical damage due to improper cultivation.

Chip color indices for potato varieties in all three locations in 1975 are given in Table 4.

Belleisle which is resistant to fusarium wilt performed well, particularly at Brandon. It appears to be well adapted to Vermont. F6208 did well at Brandon and Wolcott. B6987-56 was the highest yielding selection at Brandon. This variety had the highest specific gravity of any variety in the three Vermont locations. It will probably be named in 1976. Hudson was the highest yielding variety at South Burlington.

Vermont Table 1. Yield, percentage of yield between 1-7/8 and 4 inches, specific gravity, and total solids for 18 potato varieties grown at Brandon, Vermont - 1975.

Variety[1]	Yield above 1½ inches Cwt./A.	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/4 to 4 inches	Specific Gravity	Percentage total solids
Belleisle	332	98.1	77.8	1.072	18.53
Cariboo	235	95.8	50.2	1.073	18.74
Cobbler	361	97.8	79.3	1.067	17.47
Hudson	279	97.4	78.8	1.065	17.05
Katahdin	304	93.3	79.9	1.059	15.78
Kennebec	306	98.0	77.8	1.065	17.05
Shurchip	307	96.3	76.0	1.056	15.15
Targhee	151	64.1% 4 to 10 oz. size		1.066	17.26
B6986-137	281	97.1	74.0	1.076	19.37
B6987-56	362	97.6	77.6	1.084	21.06
B7024-6	246	97.0	77.0	1.072	18.53
BR6626-5	243	93.6	52.2	1.068	17.68
BR6864-9	293	96.7	66.5	1.059	15.78
BR7093-5	179	96.8	77.8	1.061	16.21
CA02-7	285	95.4	63.0	1.068	17.68
CA40-7	306	96.8	74.0	1.066	17.26
F6208	270	96.9	78.8	1.071	18.32
BR7108-1	353	95.2	73.0	1.071	18.32
Bayes L.S.D. (0.05)	101			0.005	

1/ Planted - May 20; killed - August 26; harvested - October 23, 1975. Seedpieces of Targhee spaced 12 inches apart, all other varieties spaced 9 inches apart. Fertilizer: 144-216-216.

Vermont Table 2. Yield, percentage of yield between 1-7/8 and 4 inches, specific gravity, and total solids for 20 potato varieties grown at Burlington, Vermont - 1975.

Variety	Yield above 1-1/2 inches Cwt./A.	Percentate of yield 1-7/8 to 4 inches	Percentage of yield 2-1/4 to 4 inches	Specific Gravity	Percentage total solids
Abnaki	162	91.2	62.5	1.070	18.10
Bake King	124	88.6	42.0	1.083	20.85
Belleisle	150	84.4	40.5	1.069	17.89
Cascade	201	90.0	55.8	1.069	17.89
Cobbler	147	79.9	38.4	1.075	19.16
Green Mountain	276	95.5	70.2	1.073	18.74
Hudson	284	93.7	79.7	1.065	17.05
Iopride	185	92.2	60.4	1.068	17.68
Katahdin	232	95.1	77.2	1.068	17.68
Kennebec	220	93.2	66.4	1.069	17.89
Nampa	125	51.2% 4 to 10 oz. size		1.071	18.32
Norland	161	88.7	35.9	1.076	19.37
Oromonte	162	70.8	46.8	1.069	17.89
Russet Burbank	134	37.3% 4 to 10 oz.size		1.075	19.16
Superior	78	79.9	30.0	1.075	19.16
Targhee	89	46.6% 4 to 10 oz. size		1.066	17.26
York	85	72.6	26.6	1.077	19.58
B6987-29	198	98.1	78.5	1.075	19.16
BR7104-10	171	88.1	47.3	1.082	20.64
F6208	112	95.8	60.9	1.072	18.53
Bayes L.S.D. (0.05)	96			0.007	

1/ Planted - May 28; harvested - October 21, 1975. Seedpieces of Nampa and Russet Burbank spaced 18 inches apart, Targhee at 16 inches, all others apaced at 9 inches. Fertilizer: 195-105-105.

Vermont Table 3. Yield, percentage of yield between 1-7/8 and 4 inches, specific gravity, and total solids for 18 potato varieties grown at Wolcott, Vermont - 1975.

Variety[1]	Yield above 1½ inches Cwt./A.	Percentage of yield 1-7/8 to 4 inches	Percentage of yield 2-1/4 to 4 inches	Specific Gravity	Percentage total solids
Belleisle	200	94.5	74.4	1.076	19.37
Cariboo	136	88.5	49.6	1.085	21.37
Cobbler	218	93.7	72.1	1.072	18.53
Hudson	220	93.0	79.1	1.075	19.16
Katahdin	250	96.0	81.7	1.074	18.95
Kennebec	277	93.1	82.0	1.073	18.74
Shurchip	269	97.2	81.0	1.067	17.47
Targhee	200	54.7% 4 to 10 oz. size		1.067	17.47
B6986-137	161	93.8	71.6	1.083	20.85
B6987-56	237	96.1	78.0	1.086	21.48
B7024-6	185	90.5	65.1	1.079	20.00
BR6626-5	204	92.9	66.5	1.070	18.10
BR6864-9	255	90.5	74.8	1.066	17.26
BR7093-5	147	95.3	78.1	1.069	17.89
BR7108-1	203	93.0	66.1	1.077	19.58
CA02-7	229	94.8	73.2	1.070	18.10
CA40-7	179	96.2	79.8	1.070	18.10
F6208	285	95.0	80.5	1.071	18.32
Bayes L.S.D. (0.05)	105			0.005	

1/ Planted - May 27; killed - September 4; harvested - October 1, 1975. Seedpieces of Targhee spaced 12 inches apart, all other varieties spaced 9 inches apart. Fertilizer: 136-204-204.

Vermont Table 4. Chip color indices for potato varieties grown at Burlington, Brandon, and Wolcott, Vermont - 1975.

Variety	Location and Chip Color[1]		
	Brandon	Burlington	Wolcott
Abnaki		3.8	
Bake King		5.2	
Belleisle	8.6	5.4	9.4
Cascade		5.6	
Cariboo	7.2		8.3
Cobbler	9.0	6.1	9.2
Green Mountain		7.6	
Hudson	9.8	7.5	10.0
Iopride		5.8	
Katahdin	8.7	6.2	8.6
Kennebec	8.5	5.1	8.1
Nampa		7.0	
Norland		4.8	
Oromonte		5.2	
Russet Burbank		5.9	
Shurchip	8.0		7.0
Superior		4.5	
Targhee	10.0	6.7	9.9
York		4.4	
B6986-137	6.3		4.0
B6987-29		4.2	
B6987-56	7.3		7.4
B7024-6	6.4		5.9
BR6626-5	8.8		9.9
BR6864-9	8.5		9.1
BR7093-5	7.0		5.9
BR7104-10		4.7	
BR7108-1	7.7		7.3
CA02-7	6.9		8.2
CA40-7	9.7		9.9
F6208	9.3	6.5	9.8
Bayes L.S.D. (0.05)	0.9	1.1	0.8

1/ Chips with lower indices are lighter in color.

VIRGINIA

Boyett Graves and R. N. Hofmaster

Variety Trials and Insect Resistance Studies

Methods. Potato varieties were evaluated for adaptability, horticultural characteristics, and air pollution in either Advanced (5 replications), Replicated Observational (4 replications) or First Year Observational (1 replicate) trials. Standard varieties included in the advanced and replicated observational trials were: Pungo, Superior, Norchip, LaChipper, and Wauseon. In the observational trial Norchip, Pungo, or Wauseon was planted every eighth row for comparison. Fertilizer, herbicide, and irrigation were according to recommendations for commercial culture in the area. Data from these plots are in Virginia Tables 1, 2, and 3.

Selected seedlings and varieties were planted in July and evaluated for potato tuber worm resistance. Selections in the replicated test (Virginia Table 4) were chosen because of past performance in the yield trials or because of high or low infestation of European corn borers in 1973. The seedlings in Virginia Table 5 were chosen because they are being used or may be used as parents in a breeding program. The counts in Virginia Table 4 and 5 under the columns "Mines per Stem" were actual counts that have been adjusted because of considerable differences in plant size, leaf size and number, etc. to more nearly reflect relative levels of infestation. The Visual Ratings relfect estimated percent damage by tuber moth and are the mean of three ratings made at 4-day intervals.

Weather Conditions. Excessive rainfall after planting resulted in some delay of emergence and reduced stands.

Advanced Yield Trial. Seedlings B7772-5, B6987-29, B6987-56, and B7839-7 were among the top yielding group. All had acceptable to excellent conformation ratings, good to moderately low (B6987-29) air pollution ratings, and only B7772-5 had preharvest sproutings (heat sprouts). Air pollution ratings were good on Superior, Alamo and LaChipper in 1975 which is quite unusual for Virginia. Normally these varieties show moderate to high levels of susceptibility. Norchip and Wauseon had considerable air pollution damage. In previous years these varieties exhibited moderate to excellent levels of resistance in Virginia.

Replicated Observational Trial. Seven of 23 seedlings in this trial were selected for testing in the 1976 Advanced Yield Trial. B7009-4 was one of the better selections in the trial. See Virginia Table 2.

First Year Observational Trial. Twenty-six long tubered selections and 123 round tubered selections were in this trial. Line B7516-9 was the most outstanding selection of this test. Six long tubered seedlings and 37 round tubered seedlings were selected for the 1976 Replicated Observational Trial. Yields, tuber conformation and air pollution ratings are shown in Virginia Table 3.

Potato Tuber Moth Resistance Study. The objectives of this study were, first to determine levels of tuberworm (Phthorimaea operculella) resistance in breeding lines and seedlings and to develop a method of measuring various levels of resistance or susceptibility. Virginia Tables 4 and 5 show the results of counts and ratings. There are definitely some clones with an appreciable level of resistance. The count method results in a figure representing mines/stem, mines/plant, mines/leaf, etc., and in this case was adjusted based on an estimation of plant size. The visual rating is essentially an estimation of percent plant damage and could be efficiently used on large populations to identify plants with reasonable levels of resistance. It is probably as accurate as the mines/stem method used here because that system was also based on an estimation.

Studies are underway to determine if tuber infestation counts in storage will give comparable results.

Virginia Table 1. Advanced Yield Trial. Yield, appearance rating, air pollution injury, and incidence of preharvest sprouting of potatoes at Painter, Va. Round tubered selections, 1975.

Variety	Yield (cwt/Acre)[2/] Size A (1 7/8" +)		1 1/2 - 1 7/8"	Air Pollution Rating[3/]	Appearance Rating[1/]	Sprouts Before Harvest
B7802-2	322	a	19	8	4	no
B7772-5	317	ab	17	6	3	few
Alamo	312	abc	24	6	2	few
B6987-29	311	abc	22	5	4	no
Abnaki	310	abc	21	7	2	some
Superior	307	abcd	18	8	3	no
B6987-56	306	abcd	30	7	3	no
Cascade	306	abcd	45	9	2	some
Pungo	301	abcde	26	8	2	some
Hudson	292	abcdef	24	9	4	no
LaChipper	292	abcdef	20	7	4	no
B7839-7	288	abcdef	28	6	4	no
B7152-1	285	bcdefg	29	1	4	no
Penn 71	283	bcdefg	19	7	3	no
B7139-4	282	bcdefg	13	6	3	few
B6969-2	279	cdefg	17	6	3	few
B7154-10	273	defgh	27	6	4	no
B7164-25	272	defgh	25	5	4	no
B7155-56	272	defgh	41	6	2	few
B7768-4	268	efgh	31	8	2	few
B6951-5	267	efgh	12	8	4	no
BR7051-3	267	efgh	26	8	3	few
B7148-4	267	efgh	11	6	4	no
Katahdin	267	efgh	20	5	4	no
B7252-3	256	fgh	26	7	4	no
B6987-43	252	gh	14	9	3	no
B7152-12	251	h	26	7	4	no
B6951-1	243	hi	27	6	4	no
B6495-20	242	hi	22	8	3	no
Wauseon	241	hi	20	4	4	no
B7590-6	241	hi	26	8	4	no
B7154-6	233	i	33	4	4	no
Norchip	230	i	47	7	2	no
B6955-35	221	j	38	6	4	no
B7151-4	209	k	20	5	3	some

1/ Appearance rating: 0 = very poor and unattractive; 4 = excellent appearance.

2/ Yields followed by a letter in common are not significantly different at 5% level of probability.

3/ Air pollution rating: 0 = dead; 1,2,3,4 (decreasing appearance of plants with varying leaf fall); 5 = (most leaves with symptoms but general appearance good); 6,7,8 = (decreasing percent of foliar symptoms); 9 = (no symptoms)

Virginia Table 2. Replicated Observational Trial. Yield, appearance rating, air pollution injury, and incidence of preharvest sprouting of potatoes at Painter, Va. Round Tubered Selections, 1975.

	Yield - cwt/A[2]				
Pedigree	Size A 1 7/8 in. +	Size B 1 1/2 - 1 7/8 in.	Air Pollution Rating[3]	Appearance Rating[1]	Pre-harvest Sprouting
B8185-4	358 a	25	9	2	no
B7009-4	306 b	13	7	3	no
Pungo	305 b	23	9	2	few
B6986-2	292 gc	10	8	3	no
B6959-N1	288 bc	42	7	3	few
B7910A-6	283 b-d	29	8	3	no
B6987-56	280 b-d	35	8	4	no
B7516-7	278 b-d	5	5	3	no
B8073-3	277 b-d	26	6	4	few
B6955-33	275 b-d	23	8	3	no
B7902-4	271 b-e	19	8	2	few
B6973-N4	261 c-f	58	8	2	mod.
Superior	260 c-f	20	9	3	no
B8392-5	258 c-f	22	6	4	no
B7902-9	256 c-f	10	9	3	few
B7903-1	248 d-g	49	8	2	mod.
B7828-8	245 d-h	27	9	2	no
B7888-9	237 e-i	31	7	2	no
B7863-5	235 e-i	14	5	3	no
Wauseon	234 f-i	18	6	4	no
B8185-3	232 f-i	23	5	2	mod.
Norchip	231 f-i	52	7	2	no
B8393-6	212 g-j	31	5	4	no
71C15-20	209 h-j	44	6	2	few
B7664-2	205 ij	36	5	3	few
B7845-23	195 jk	26	7	3	few
B8222-3	156 k	44	9	2	few

1/ See Virginia Table 1

2/ See Virginia Table 1

3/ See Virginia Table 1

Virginia Table 3. Yield, air pollution rating and appearance rating of selected potato seedlings. Painter, Va. 1975

Pedigree	Yield (cwt/A) 1 7/8 +	Yield (cwt/A) 1 1/2 - 1 7/8	Air Pollution Rating3/	Appearance Rating1/
B7516-9	248	31	5	4
B7186-14	121	12	6	3
B7186-33	125	30	7	4
B8424-14	146	26	9	4
B8429-9	170	40	6	3
B8434-14	191	32	4	4
B8467-1	172	58	7	3
B8480-3	131	47	8	4
B8486-1	168	14	6	3
B8492-11	133	35	8	3
B8498-9	153	34	4	4
B8499-13	110	59	5	4
B8501-10	162	40	9	3
B8514-18	205	21	8	4
B8542-16	114	49	5	3
B8543-4	136	49	7	3
B8573-2	135	37	9	3
B8582-2	191	13	7	3
B8590-5	164	48	6	3
B8598-5	113	17	6	4
B8599-4	139	26	5	4
B8599-42	150	27	5	3
B8599-45	133	40	7	4
B7828-18	130	12	7	3
B8392-7	60	11	5	4
B7897-3	72	26	5	4
B7914-2	110	36	5	4
B8091-8	184	47	8	3
B8101-3	144	48	7	3
B7828-13	53	38	8	3
80T-2	82	48	6	3
8PX-1	82	20	6	4
8SA-1	99	18	8	4
72C23-5	85	33	6	3
72C75-4	140	33	9	3
72C75-2	44	60	9	3
B8530-4	191	16	6	4
B8536-9	293	31	6	3
B8538-3	230	28	7	4
B8540-2	245	38	5	4
B8568-19	238	36	6	2
B8377-2	246	34	6	4

1/ See Virginia Table 1

3/ See Virginia Table 1

Virginia Table 4. Potato Tuberworm Counts. Fall Potatoes, 1975, Painter, Va. 1/ 3/

	1975 No. Mines Per Stem	1975 Visual Rating 2/	1973 E. Corn Borer No./20 Hills
B7139-4	26	1.0	13
Hudson	46	1.3	13
B7134-3	54	1.7	34
B7680-3	56	2.3	30*
B7151-4	62	2.3	24
Sebago	66	2.7	-
B7165-8	74	1.7	25
Abnaki	80	2.0	18
B7138-11	80	2.3	6
B7152-1	82	2.0	21
B7152-3	92	1.7	30*
B7160-4	98	2.7	6
B7147-90	98	2.3	30*
B6495-20	100	2.7	7
Norchip	110	2.7	18
B7152-14	110	3.0	20
B6987-56	110	3.3	18
B7153-29	120	3.3	30*
B7636-4	125	3.7	30*
Wauseon	130	3.0	14
B7669-2	132	3.0	7
Superior	135	3.7	15
Cobbler	142	3.7	-
B7694-1	144	2.0	4
B7587-5	148	2.3	30*
B7167-30	160	4.3	1
B7154-10	178	3.3	22
B7147-8	178	3.7	6
B7679-9	186	3.7	3
B7147-9	212	4.0	30*
B7147-19	High**	5.0	30*
B6969-2	High**	5.0	25

1/ Plots replicated 3 times.

2/ 0 = no injury (resistant)
1 = light injury (tolerant)
2 = moderate injury (low tolerance)
3 = moderately severe injury (susceptible)
4 = almost all leaves killed by injury (susceptible)
5 = early defoliation and later death of plant (susceptible)
* - these plots were completely killed by corn borers. 30 borers per hill was the average of the 25 worse selections in the 1973 planting.
** - completely defoliated by tubermoth, most stems dead.

3/ These seedlings and varieties were selected on basis of popularity in eastern Virginia, past performance in eastern Virginia, and corn borer counts made in 1973.

Virginia Table 5. Number of potato tuberworm leaf mines per stem and visual rating of tuberworm damage in fall grown potatoes. Painter, Va. 1975. 1/ 3/

Pedigree	Mines/stem	Visual Rating 2/
B7861-2	18	1
B6987-57	72	2
B7165-2	80	3
B6987-43	94	3
B7141-1	96	2
B7575-1	96	3
B7845-29	96	3
B7813-5	100	3
B7148-1	104	3
B7848-23	104	3
B6951-5	104	3
B7848-2	106	3
B6987-29	108	3
B7711-11	114	3
B7583-6	116	3
B7610-1	116	4
B7188-56	122	3
B6532-4	122	3
B6987-2	124	3
B7684-7	124	3
B7196-25	126	4
B9687-54	134	3
B7147-10	144	3
B6567-12	150	4
B7190-2	156	4
B6703-2	216	4
B7196-23	238	3
B6951-1	**	4+
B7167-2	**	4+
B7676-2	**	4+

1/ Single row plots, no replication.

** Plants completely defoliated by tuberworms.

2/ 0 = no injury (resistant
1 = light injury (tolerant)
2 = moderate injury (low tolerance)
3 = moderately severe injury (susceptible)
4 = almost all leaves killed by injury (susceptible)
5 = early defoliation and later death of plant (susceptible)

3/ These seedlings were selected because they are being used as parent stocks in the Beltsville breeding program.

WASHINGTON

N. Holstad, R. Kunkel, R. Holland and M. Martin

Results of Variety Trials 1975

The 1975 variety trials were conducted at three locations in the Columbia Basin of Washington State. Three trials were on the W.S.U. Royal Slope Research Farm about 15 miles west of Othello, one was on a commercial farm about 25 miles east of Pasco and one was on a commercial farm about 20 miles west of Moses Lake. The two trials on commercial farms contained advanced clones, the plots were two rows wide and several hundred feet long and the responses were compared to the paired adjacent Russet Burbank potatoes. In all trials the rows were 34 inches apart and the seed in the rows was spaced 8.2 inches apart.

Specific gravity of the tubers was determined with a NPCI potato hydrometer. Chip color was determined by cutting two slices .058 inches thick from each of 10 tubers of each clone tested and frying at 375 F until bubbling ceased. The chip colors were visually compared with a NPCI color chart. Values of seven or less are considered acceptable.

Fertilization was done by sidedressing the plants with a 12-12-12 suspension fertilizer to which had been added zinc, boron and Dyfonate. The fertilizer bands were about 6½ inches on each side of the potato rows.

Royal Slope trials 1 and 2 were planted on land which had been in wheat in 1974. The potato seed was planted into the wheat stubble and volunteer wheat, which was four inches tall, without land preparation. The potatoes were furrow irrigated.

Royal Slope Farm Trial 1. Seed pieces from 62 clones, two ounces each, were planted on May 15. Each plot was 30 feet long and each clone was paoired with the Russet Burbank variety. The tubers were harvested on October 29. Within a month after harvest the potatoes were graded, specific gravity determinations were made and 20 tubers of each clone were cut to determine hollow heart and brown centers.

Samples were stored at 40 F until January 28 when they were conditioned at 72 F for seven days before testing for chip color. The results are in Table 1.

Royal Slope Farm Trial 2. Seed piece size, plant spacings and fertilization were the same as in Royal Slope Farm Trial 1. The seed was planted May 21 and the potatoes were harvested October 30. The plots were single rows, 95 feet long and each clone was paired on one side with the Russet Burbank variety. Grade and tuber quality determinations were made within six weeks after harvest. The results are in Table 2.

Royal Slope Farm Trial 3. This trial was on land which had been plowed and prepared in a conventional manner. Seed pieces of 20 clones were planted May 22. The plots ranged in size from 90-180 feet in length depending upon the amount of seed available. The potatoes were harvested October 31 but specific gravity and hollow heart determinations were not made until the end of December. The results are in Table 3.

Variety Trial East of Pasco. The seed was planted in a live wheat sod which was irrigated by solid set sprinklers. The soil was sandy and the topography was undulating. The seed was planted April 22. Each varietal plot was a single row about 300 feet long, and each clone was compared to an adjacent row of Russet Burbank potatoes. The vines were beaten October 15 and the potatoes were harvested October 16. Sixty tubers were cut for hollow heart and brown center determination. Samples were stored at 40 F until February 13, at which time they were conditioned for 13 days at 72 F before testing for chip color. The results are in Table 4.

Variety Trial West of Moses Lake. The seed of seven varieties were planted into a wheat sod. The sheat cover crop was killed with IPC. The plots were two rows wide and varied from 480-600 feet depending upon the amount of seed available. Two samples each 100 feet long of adjacent Russet Burbank potatoes paired with each variety were used for yield and grade comparisons. The potatoes were irrigated by pivot system. The seed was planted April 30, the vines were beaten October 4 and the potatoes were harvested October 10. Hollow heart and brown centers were determined by cutting 60 tubers. Specific gravity measurements were made December 10-15. The results are in Table 5.

Evaluation of Storage Behavior of Late Harvested Varieties. Storage Years 1973-74 And 1974-75. Numbered seedlings and varieties were analyzed during storage for dry matter, total sugars, reducing sugars, and pH readings. A French fry color rating was also made.

For the 1973-74 storage year samples were received in mid-November and held at 45 F. These were analyzed in Jan, Feb, and April 1974. Although 45 F temperature storage was more realistic from the processing point of view, differences in sugar content were harder to determine.

In the 1974-75 storage season, samples which were stored at 42 F were analyzed twice during the winter on Feb 5 and Mar 3, 1975. Analysis of the stem and bud halves of tubers were made separately since differential color development between the stem and bud halves is of prime concern to French fry processors.

Washington Table 1. Royal Slope Farm Variety Trial 1.[1/,2/]

Selection	CWT/A		% 1's		Spec. Grav.[3/]		% Hol. Heart		% Br. Center		Chip Color	Clone Descrip.[4/]
	Clone	RB	Clone	RB	Clone	RB	Clone	RB	Clone	RB		
BR 7093-24	820	354	74	56	78	92	5	0	0	0	6.5	RW
A 69327-5	774	697	72	57	87	84	5	0	0	0	7.5	LB
*A 6135-4	727	743	61	52	80	88	15	10	0	0	7.5	LB
A 503-42	727	571	72	55	83	86	16	4	0	2	---	RW
A 503-42	687	641	70	52	74	96	40	10	0	0	7.0	RW
WC 285-18	687	682	67	49	88	85	0	10	0	0	7.0	LR
BR 7093-24	656	359	79	55	83	82	5	0	0	0	6.0	RW
*A 6135-4	615	538	57	52	81	82	0	10	0	0	7.5	LW
CC 05-19	615	682	67	49	62	85	0	5	10	0	5.5	RW
W 338-1	615	641	60	64	80	96	0	0	0	0	5.0	LR
CA 60-2	589	743	74	52	64	88	5	0	0	0	---	RW
WC 316-7	584	600	70	54	83	84	0	0	0	5	7.5	LR
*CC 53-4	543	600	74	54	83	84	0	10	0	0	9.0	RW
A 66107-51	538	682	50	49	76	85	5	10	0	0	---	LR
A 69827-2	533	615	71	57	76	87	15	0	5	0	7.0	LRed
B 6987-184	523	682	74	51	82	87	5	15	0	0	5.5	RW
WC 337-2	512	682	67	47	94	89	10	10	0	0	5.0	LR
W 284-1	502	538	56	52	83	82	0	10	0	0	9.0	LW
*A 503-42	482	354	66	56	76	80	30	0	0	0	7.0	RW
A 68683-14	482	682	28	47	88	89	5	10	0	0	5.0	LR
A 66122-3	477	359	43	55	78	82	0	0	0	5	7.0	LR
A 59197-5	471	600	41	54	81	84	5	0	0	5	7.0	LR
CC 53-4	471	538	68	52	77	82	5	0	0	5	8.0	RW
WC 316-1	466	523	75	57	84	92	0	10	0	0	7.5	LR
WC 304-4	436	682	79	49	66	85	0	10	0	0	8.0	LR
WC 285-83	436	641	65	64	83	96	0	0	0	0	5.0	LR
A 66107-44	430	682	60	51	79	87	0	15	0	0	7.5	LR
A 68683-7	425	359	48	55	80	82	0	0	0	5	6.0	LR
A 69786-4	420	682	43	47	85	89	15	10	5	0	4.5	LR
A 68113-4	415	523	40	57	92	92	0	10	0	0	8.5	LB
A 66102-16	410	615	50	57	99	87	0	0	0	0	6.0	LR
A 68686-22	395	354	18	56	75	80	0	0	0	0	4.5	LR

Washington Table 1, continued.

Selection	CWT/A		% 1's		Spec. Grav.[3/]		% Hol. Heart		% Br. Center		Chip Color	Clone Descrip.[4/]
	Clone	RB	Clone	RB	Clone	RB	Clone	RB	Clone	RB		
BC 7694-4	379	523	70	57	71	92	5	10	0	0	8.0	LR
321-65	369	359	44	55	99	82	0	0	15	5	4.5	RW
A 67490-3	364	354	35	56	79	80	0	0	5	0	6.0	LR
WC 325-15	364	682	59	51	85	87	20	15	0	0	7.5	LR
A 6830-3	364	538	59	52	80	82	0	10	0	0	7.0	LR
BC 7812-1	348	682	68	51	90	87	5	15	5	0	7.5	LR
BR 6626-5	343	615	57	57	79	87	0	0	0	5	7.5	RW
*W 338-1	338	697	65	57	64	84	0	0	0	0	6.0	LR
BR 68641E	338	682	55	49	75	85	10	10	0	0	7.0	RW
CD 137-5R	328	523	67	57	87	92	0	10	0	0	7.5	LR
CD 138-3	328	641	63	64	73	96	0	0	0	0	7.5	OW
BC 7679-4	251	697	55	57	76	84	65	0	0	0	8.0	LR
WC 420-1	246	742	50	52	74	88	0	10	5	0	8.0	LR
Norgold	246	600	63	54	71	84	10	0	5	5	8.0	LR
BR 7104-10	220	697	60	57	69	84	0	0	10	0	6.0	LW
A 68709-2	179	615	46	57	72	87	0	0	0	0	7.0	LR
ND 6993-13	159	641	29	64	80	96	5	0	0	10	7.5	small

1/ Clones with an asterisk appear in more than one ranking.

2/ Wheat stubble land, planted May 15, sidedressed June 6, harvested Oct. 29.

3/ 1.0 omitted

4/ LR=long russet, LW= long white, RW=round white, LB=long buff, LRed=long red, OW=oblong white.

Washington Table 2. Royal Slope Farm Variety Trial 2.[1/]

Selection	CWT/A		% 1's		Spec. Grav.[2/]		% Hol. Heart		% Br. Center		% CWT of RB	Clone Descrip.[3/]
	Clone	RB	Clone	RB	Clone	RB	Clone	RB	Clone	RB		
A 67142-1	646	510	62	57	77	85	5	15	0	0	127	LW
A 6135-4	594	591	70	54	79	85	0	10	0	2	101	LW
A 69657-4	582	510	66	57	84	85	1	15	0	0	114	LW
NDA 8694-3	580	633	73	54	75	87	0	12	0	0	92	OR
A 69327-5	556	591	65	54	84	85	0	10	0	2	94	LR
NDA 8451-3	551	510	66	57	82	85	5	10	0	2	108	LR
A 69827-2	542	591	66	54	--	85	-	10	-	2	92	LRed
A 66107-51	536	573	40	56	69	86	5	13	0	0	94	LR
A 69868-2	515	591	53	54	69	85	0	10	0	5	85	LW
A 6868-1	485	633	60	54	77	86	0	12	0	0	77	OR
A 66122-3	480	591	48	54	70	85	1	10	0	5	81	LR
A 68678-1	445	633	64	54	85	86	20	12	0	0	70	LR
A 68683-13	438	510	21	57	78	85	5	10	0	2	86	LR
A 68709-2	416	633	56	54	76	85	0	10	0	5	66	LR
A 68599-1	404	591	70	54	77	85	0	10	0	2	68	LR
BC 7679-4	399	573	75	56	78	86	40	13	0	0	59	OR
A 59197-5	362	573	64	56	76	86	0	13	0	0	63	LR
WC 316-1	330	573	81	56	75	86	15	13	0	0	58	LR
321-65	309	573	57	56	100	86	10	13	5	0	54	RW
A 6680-5	301	536	51	66	69	84	5	5	35	2	56	LR
WC 285-83	290	536	55	66	85	84	0	5	0	2	54	LR
A 66107-44	256	591	59	54	78	85	0	10	0	2	43	LR

1/ Wheat stubble land planted May 21, sidedressed June 6, harvested Oct. 30.

2/ 1.0 omitted

3/ LW=long white, LR=long russet, OR=oblong russet, LRed=long red, RW=round white.

Washington Table 3. Royal Slope Farm Trial 3.[1/], [2/]

Selection	CWT/A	% 1's	Spec. Grav.[3/]	% Hol. Heart	% Br. Center	Descrip.[4/]
	Clone	Clone	Clone	Clone	Clone	
W 338-1	876	63	76	0	0	LR
WC 304-4	828	72	80	15	0	LR
WC 285-18	771	62	85	0	0	LR
*RB Canada	650	34	82	5	0	LR
*RB Montana	580	29	77	0	0	LR
W 284-1	567	72	72	10	0	LR
*RB Canada	555	23	83	15	0	LR
*RB Canada	514	23	78	5	0	LR
A 68686-22	510	33	80	0	0	LR
A 6830-3	506	75	94	5	0	LR
Norgold	489	71	82	10	0	LR
WC 420-1	483	51	67	0	0	LR
BC 7812-1	483	37	80	15	0	LR
A 68113-4	450	41	93	0	0	LW
A 69786-4	436	57	95	0	0	LR
A 68683-14	400	32	87	0	5	LT
A 68686-22	365	41	80	0	5	LR
BC 7812-1	368	48	78	10	0	LR
WC 316-7	352	70	86	5	0	LR
WC 325-15	314	62	89	20	0	LR
WC 337-2	282	65	100	0	0	LR
A 68683-7	265	66	90	5	0	LR
A 67490-3	265	65	93	10	0	LR
A 68709-2	118	25	65	0	0	LR

[1/] Planted May 22, Sidedressed June 6, Harvested October 31.

[2/] Clones with asterisk are virus tested.

[3/] 1.0 omitted

[4/] LR=long russet, LW=long white, LT=long tan.

Washington Table 4. Variety Trial East of Pasco.[1/]

Selection	CWT/A		% 1's		Spec. Grav.[2/]		% Hol. Heart		% Br. Center		Chip Color 2-24-76	Clone Descrip.[3/]
	Clone	RB	Clone	RB	Clone	RB	Clone	RB	Clone	RB		
A 6135-4	683	707	71	66	82	87	0	5	23	17	8.0	LB
A 6371-2	632	512	63	59	88	94	5	10	2	15	7.0	LR
A 66122-3	619	469	57	60	78	85	22	12	7	18	7.0	LR
WC 304-4	520	547	83	60	80	89	13	10	15	18	9.0	LR
W 338-1	430	708	68	66	83	86	2	10	0	23	7.0	LR
A 59197-5	129	547	34	62	80	89	18	10	0	18	8.0	LR

[1/] April 22, 1975 Planted, October 15, 1975 Vines beaten, October 16, 1975 Harvested.

[2/] 1.0 omitted

[3/] LB=long buff, LR=long russet.

Washington Table 5. Variety Trial West of Moses Lake.[1/]

Selection	CWT/A		% 1's		Spec. Grav.[2/]		% Hol. Heart		% Br. Center		Clone Descrip.[3/]
	Clone	RB	Clone	RB	Clone	RB	Clone	RB	Clone	RB	
A 6135-4	731	565	68	74	76	84	8	0	0	0	LB
A 503-42	716	474	59	75	80	84	15	0	0	0	RW
A 66122-3	582	422	52	62	75	84	10	0	0	0	LR
A 59197-5	521	474	47	64	82	85	0	0	0	0	LR
W 338-1	476	549	62	73	74	83	0	0	0	0	LR
A 6371-2	374	452	60	64	84	85	2	0	2	0	LR
WC 304-4	344	368	78	67	64	83	3	0	2	0	LR

[1/] April 30, 1975 Planted, October 4, 1975 Vines beaten, October 10, 1975 Harvested.

[2/] 1.0 omitted

[3/] LB=long buff, RW=round white, LR=long russet.

Washington Table 6. Variety Storage 1973-74 Stored at 45F

Lot No.	Variety	Tuber Portion	% Dry Matter	% Reducing	% Sucrose	pH	Fry Class
1.	A 6334-19	Stem	19.9	5.7	0.3	6.17	2.8
		Bud	19.7	2.7	0.7	6.10	2.2
		Av.	19.8	4.2	0.5	6.14	2.6
2.	A 6534-20	Stem	20.3	3.8	0 5	6.17	2.9
		Bud	19.3	2.7	0.6	6.07	2.4
		Av.	19.8	3.3	0.6	6.12	2.7
3.	A 63126-9	Stem	19.4	4.7	0.9	6.09	3.0
		Bud	21.0	1.8	0.5	6.05	1.7
		Av.	20.2	3.3	0.7	6.07	2.4
4.	A 63184-6	Stem	17.3	6.4	0.7	6.18	2.7
		Bud	17.6	3.6	0.6	6.13	2.6
		Av.	17.5	5.0	0.7	6.15	2.7
5.	A 59197-5	Stem	18.3	1.9	0.5	6.08	1.3
		Bud	18.7	0.0	0.4	6.05	0.6
		Av.	18.5	0.9	0.5	6.06	1.0
6.	A 6371-2	Stem	20.0	4.6	0.8	6.10	3.1
		Bud	17.8	4.0	0.6	6.05	2.9
		Av.	18.9	4.3	0.7	6.08	3.0
7.	A 66122-3	Stem	19.2	2.9	0.5	6.10	2.6
		Bud	21.1	1.2	0.6	6.09	1.4
		Av.	20.5	2.1	0.6	6.10	2.0
8.	A 6789-7	Stem	16.9	7.8	4.4	6.18	3.4
		Bud	17.9	6.2	1.9	6.13	3.7
		Av.	17.4	7.0	3.2	6.16	3.6

Washington Table 7. Variety Storage 1973-74 Stored at 45F

Lot No.	Variety	Tuber Portion	% Dry Matter	% Reducing	% Sucrose	pH	Fry Class
9.	A 6135-4	Stem	19.9	6.1	1.0	6.21	3.6
		Bud	18.6	5.7	0.5	6.13	3.8
		Av.	19.3	5.9	0.8	6.17	3.7
10.	RB	Stem	19.1	4.6	0.5	6.13	3.1
	Idaho VF	Bud	22.2	1.3	0.6	6.13	1.7
		Av.	20.7	3.0	0.6	6.13	2.4
11.	A 6334-20	Stem	20.8	3.8	0.5	6.18	2.3
		Bud	20.3	1.7	1.2	6.15	1.7
		Av.	20.6	2.8	0.9	6.17	2.0

Correlations: Percent dry matter to reducing sugar accumulation $r = -0.52$

Percent reducing sugar accumulation to fry class $r = +0.90$

Percent reducing sugar accumulation to pH $r = +0.61$

Washington Table 8. Variety Storage 1974-75 Stored at 42 F

Lot No.	Variety	Tuber Portion	% Dry Matter	% Reducing	% Sucrose	pH	Fry Class
1.	A 6135-4	Stem	21.3	5.9	1.3	6.20	4.0
		Bud	17.9	6.7	0.5	6.10	3.9
		Av.	19.6	6.3	0.9	6.15	4.0
2.	A 63184-6	Stem	19.0	7.8	1.5	6.15	3.6
		Bud	17.9	6.5	1.1	6.08	3.6
		Av.	18.5	7.2	1.3	6.11	3.6
3.	A 64206-4	Stem	23.4	5.4	1.4	6.15	3.5
		Bud	21.2	4.2	1.2	6.08	3.3
		Av.	22.3	4.8	1.3	6.12	3.4
4.	W 280-11	Stem	22.1	4.4	0.9	6.07	2.8
		Bud	21.9	2.9	1.0	6.05	2.4
		Av.	22.0	3.7	1.0	6.06	2.6
5.	W 338-1	Stem	23.2	6.1	1.2	6.18	3.5
		Bud	21.8	4.5	0.9	6.05	3.2
		Av.	22.5	5.3	1.1	6.10	3.4
6.	W 326-1	Stem	19.2	7.9	1.9	6.13	4.1
		Bud	18.0	6.6	1.3	6.00	3.9
		Av.	18.6	7.3	1.6	6.07	4.0
7.	W 377-2	Stem	23.3	4.3	0.8	6.15	3.1
		Bud	22.3	2.5	1.1	6.13	2.6
		Av.	22.8	3.4	1.0	6.14	2.9
8.	WC 304-4	Stem	19.1	8.6	1.0	6.15	3.8
		Bud	17.3	8.4	0.7	6.08	3.8
		Av.	18.2	8.5	0.9	6.12	3.8
9.	WC 314-2	Stem	25.0	4.9	1.4	6.15	3.2
		Bud	21.8	4.3	1.1	6.03	3.1
		Av.	23.4	4.6	1.3	6.09	3.2

Lot. No.	Variety	Tuber Portion	% Dry Matter	% Reducing	% Sucrose	pH	Fry Class
10.	321-65	Stem	23.1	6.3	1.0	6.05	3.7
		Bud	19.8	4.5	0.6	5.95	3.3
		Av.	21.5	5.4	0.8	6.00	3.5
11.	A 66122-3	Stem	20.4	4.1	0.9	6.03	3.3
		Bud	20.0	3.9	0.5	5.99	3.3
		Av.	20.2	4.0	0.6	6.01	3.3
12.	A 6317-2	Stem	21.9	5.3	0.8	6.05	3.6
		Bud	21.0	4.4	0.9	6.00	3.2
		Av.	21.5	4.9	0.9	6.03	3.4
13.	A 503-42	Stem	22.4	4.5	2.5	6.30	3.2
		Bud	18.8	5.4	1.3	6.10	3.3
		Av.	20.6	5.0	1.9	6.20	3.3
14.	A 59197-5	Stem	20.7	4.8	0.5	6.13	2.9
		Bud	19.7	3.7	0.8	6.05	2.7
		Av.	20.2	4.3	0.7	6.09	2.8
15.	A 6334-19	Stem	21.7	4.8	1.2	6.18	3.5
		Bud	20.9	3.6	1.1	6.10	3.4
		Av.	21.3	4.2	1.2	6.14	3.5
16.	W 284-B	Stem	21.1	5.8	0.8	5.90	3.8
		Bud	21.1	5.1	0.4	5.93	3.8
		Av.	21.1	5.5	0.6	5.92	3.8
17.	RB Mont.	Stem	22.0	4.7	1.3	6.08	3.3
		Bud	21.0	2.9	2.8	6.00	3.1
		Av.	21.5	3.8	2.1	6.04	3.2

Correlations: Percent dry matter to reducing sugar accumulation r = -0.49
Percent reducing sugar accumulation to fry class r = +0.79
Percent reducing sugar accumulation to pH r = +0.19

WASHINGTON

Mark W. Martin

Advanced Clone Evaluation

Dr. William Hoyman retired in April 1975 and I assumed his potato breeding program centered at Prosser, Washington. We evaluated the production potential, disease reaction, storability and processing qualities of a number of lines developed by Dr. Hoyman and other breeders around the United States. In all of our trials we broadcast and plowed down 400#N, 100#P, 250#K and 10#Zn/A and applied another 50#N near the seedpiece at planting. Temik at 3#ai/A was banded in at emergence followed by aircraft application of Monitor at 0.75#/A at two week intervals later in the season. Treflan plus Eptam (1 + 2#/A) was worked into the hills for weed control.

Early Harvest Trial (Table 1). This trial was planted on April 17, vinekilled on August 11 and dug August 28. Two of Hoyman's early lines W284-1 and W330-1 were compared with Norgold in a replicated trial. Line W284-1 does not seem to offer any particular advantages over Norgold and it produced lower yields, smaller tubers, had more scab, more tendency toward elephant hide and became very flaccid in storage. Line 330-1 looked very good, producing a high yield, high percent 1's, good net, high specific gravity, a low level of susceptibility to scab and verticillium, good storability and good processing quality. It has two problems which may prevent its release: a distinct susceptibility to the formation of Rhizoctonia sclerotia and a bad tendency toward a pear shaped tuber. This line should be widely tested as an early fresh market and processing line.

Another 15 lines were included in the early trial in one replication only (Table 1). Three of them WC230-14, WC285-18 and WC316-1 showed enough promise that we will include them in a replicated early trial in 1976. Line WC230-14 will probably not make it because of a tendency toward hollow heart. Line WC285-18, a sister to the recently released Centennial Russet (WC285-146) looks much better than Centennial in the Northwest. It produces relatively small, smooth, flattened tubers of high quality. Much early dying of the plants of WC285-18 was observed in one location. Line WC316-1 is reported to look very good in Texas trials. It looked good in the early trial and showed only one noteworthy weakness, a variable tuber size. A new line WC415-1 looked very good in the early trial but has since developed much rot in storage.

Late Harvest Trial (Table 2). This trial was planted on May 22 and harvested October 31. Four of Dr. Hoyman's releases or lines, seven of Twomey's selections from Colorado, seven lines from Joe Pavek in Idaho and the variety Kennebec were planted in a replicated trial with each plot being placed in a paired comparison with the dominant variety Russet Burbank. None of Hoyman's or Twomey's lines looked very promising. Pavek's line A6135-4 looked favorable in comparison with Kennebec but did not have good storability, specific gravity or chipping quality. Idaho A6371-2 is a promising line with good qualities. Idaho A66102-16 was a very high yielder and generally performed well except for poor chip color. Idaho A68678-1 shows much promise except for a bad problem with hollow heart.

Performance Trials at Outlying Plots (Table 3). In 1975 we evaluated several areas in Eastern Washington as potential seed farms where disease free tubers might be produced. At each location a small replicated performance trial was conducted to determine relative adaptability of a few varieties and advanced test lines. Two locations, Cleveland and Vernita, were selected as most promising from the standpoint of isolation from disease. Performance data (Table 3) from these two locations indicate that Cleveland is much better adapted to potato production, especially when you consider the fact that vines on the trial at Cleveland were killed only 84 days after planting whereas the vines at Vernita were left for 120 days before killing, in an effort to increase yields. Norgold really expressed its earliness at both locations, being exceeded in yield only by Cascade which looked outstanding at Cleveland. Dr. Hoyman's early lines W284-1 and W330-1 did not compare well with Norgold at either location.

Preliminary Observation Trials (Tables 4 and 5). A few tubers of some promising clones were obtained from breeding programs in Colorado, Idaho and Beltsville and placed in trials at Prosser, Cleveland, Vernita and Alderdale, to increase them and to observe their adaptability. Idaho lines A66102-16, A66122-3 and A68678-1 all showed promise as early maturing lines. For a main season crop we were impressed with the potential of A66107-4, A67315-7, A68709-2, A69327-5 and A69827-4. These new promising lines will be placed in replicated performance trials in 1976.

Washington Table 1. Early harvest trial of promising russet clones developed in Washington and Colorado conducted at Prosser, Washington--1975

Clone[1]	Cwt/A	% 1's	Ave. Size lbs/tuber	Specific Gravity	Susceptibility to: Rot[2]	Vert.[2]	Tuber Rhizoct.[2]	Scab[2]	Stor-ability[3]	Chip Color[4]	Notes
W284-1	401	75	.30	1.078	2	4	2	5	1	7	
W330-1	575	86	.41	1.083	1	3	5	2	4	3	Very Good Early Line
Norgold	535	80	.34	1.075	3	5	5	2	2	8	
WC230-14	368	71	.28	1.071	3	3	2	1	3	8	Fair Early Line
WC285-18	460	82	.29	1.092	1	2	2	1	4	5	Good Early Line
WC285-83	376	68	.26	1.064	2	3	1	1	3	7	
WC314-2	429	65	.32	1.068	4	3	1	3	1	7	
WC316-1	483	88	.33	1.089	2	4	1	2	4	5	Good Early Line
WC316-7	243	73	.34	1.078	2	1	1	2	1	7	
WC325-1	174	78	.37	1.079	2	1	1	1	1		
WC345-15	253	76	.22	1.083	1	3	3	1	1	6	
WC373-2	245	79	.33	1.060	1	2	3	1	2	7	
WC415-1	407	72	.35	1.084	1	1	1	1	1	6	Good Early Line
W541-2	347	62	.31	1.065	1	2	3	1	3	7	
Nooksack	163	71	.24	1.080	2	2	4	1	4	6	
Kennebec	414	98	.44	1.055	1	3	4	4	2	5	
Cascade	580	82	.48	1.071	1	5	4	2	1	8	Very Early
Burbank	522	22	.47	1.075	5	2	4	1	3	7	Looked Very Poor

[1] Clones W284-1, W300-1, Norgold = Average of 4 replications. All others 1 replication.

[2] Rated on 1-5 scale with 5 = very susceptible.

[3] Rated on 1-5 scale with 5 = very good storability.

[4] Chipped before putting into storage - Rated with aid of NPCI color chart with 6 and below considered satisfactory.

Washington Table 2. Late harvest trial of promising russet clones conducted at Prosser, Washington--1975

Clone[1]	Cwt/A	% 1's	Ave. Size lbs/tuber	Specific Gravity	Susceptibility to: Rot[2]	Susceptibility to: Vert.[2]	Storability[3]	Chip Color[4]	Notes
WC285-146	437	63	.30	1.070	2	5	5	7	
WC304-4	499	35	.50	1.060	2	-	1	8	
WC316-1	537	-	-	1.071	-	5	1	5	
WC316-7	515	59	.43	1.069	1	2	1	7	
WC345-15	327	64	.36	1.072	1	-	5	6	
WC373-2	145	63	.29	1.078	1	4	2	7	
WC415-1	218	53	.26	1.069	1	-	1	6	
W541-2	490	67	.42	1.061	2	4	3	7	
W542-5	577	71	.48	1.075	3	-	3	5	Variable size
A6135-4	755	90	.53	1.069	2	-	1	8	Blocky white, Pear shaped
A6371-2	659	77	.44	1.080	2	4	4	6	Pear shaped
A63126-9	755	73	.52	1.078	3	1	1	7	Very deep eyes
A63184-6	552	50	.48	1.063	2	-	4	8	Very bad growth crack
A66102-16	809	67	.50	1.077	1	2	-	7	Looks good
A66122-3	537	48	.51	1.067	2	3	1	5	Very knobby
A68678-1	611	69	.53	1.082	3	3	-	6	Looks very good, bad HH
Nooksack	506	60	.60	1.084	1	2	-	6	
Kennebec	702	54	.67	1.074	2	3	-	5	
Cascade	713	63	.58	1.068	2	5	-	8	
Russet Burbank	701	55	.54	1.078	3	4	-	7	

1/ Planted 4 reps of each clone in paired plot comparison with Russet Burbank. Results for Russet are an average of all plants of this variety.

2/ Rated on 1-5 scale with 5 = very susceptible.

3/ Rated on 1-5 scale with 5 = very good storability.

4/ Chipped before put in storage = Rated with aid of NPCI color chart - 6 and below considered satisfactory.

Washington Table 3. Performance of five promising russet selections in two outlying plots in Eastern Washington--1975

Clone[1/]	Cwt/A	%·1's	Ave. Size lbs/tuber	Specific Gravity	Notes
Cleveland:					
W284-1	339	73	.23	1.083	Very bad elephant skin
WC316-7	308	84	.31	1.076	Very bad elephant skin
W330-1	265	83	.26	1.089	
WC373-2	194	82	.26	1.084	
W541-2	253	81	.35	1.076	Good appearance
Norgold	436	83	.30	1.083	
Kennebec	350	88	.52	1.091	
Cascade	552	90	.41	1.078	Looks very good
Nooksack	303	94	.52	1.089	
Russet Burbank	417	73	.31	1.083	
Vernita:					
W284-1	287	66	.25	1.076	
WC316-7	156	58	.28	1.068	
W330-1	154	49	.27	1.070	
WC373-2	138	43	.31	-	
W541-2	243	54	.30	1.063	
Norgold	407	80	.42	1.071	
Russet Burbank	283	55	.36	1.073	

1/ Planted 2 reps at each location with each clone in paired comparison with Russet Burbank - results for Russet Burbank are average of all plots of this variety.

Washington Table 4. Notes from preliminary, early harvest trial conducted at Cleveland, Washington--1975

Clone[1/]	Overall Rating[2/]	Notes[3/]
WC230-14	1	Very poor yield - small - late Discard
WC245-2	2	Good looking russet - small - late Good Parent
W284-1	3	Fair yield, type - small Discard
WC285-83	1	Poor yield - small - late Discard
WC285-146	2	Poor yield - flat Discard
WC304-4	3-4	Good yield, size - very early - looks good Save
WC314-2	1	Poor yield - small late Discard
WC316-1	3	Poor yield - looks good Save
WC316-7	2	Poor yield - small - late Discard
WC326-1	1	Poor yield - very late Discard
W330-1	4	Good yield - very early - looks good - pear shape Save
WC345-15	2	Poor yield - small late Discard
WC373-6	1	Poor yield - small - very late Discard
WC415-1	1	Poor yield - small - very late Discard
WC415-14	2	Poor yield - small - late Discard
WC435-3	1	Poor yield - small - very late Discard
WC447-1	1	Poor yield - small - very late Discard
W541-2	2-3	Fair yield - poor uniformity Discard
W542-5	2-3	Fair yield - flat - round Discard
A6135-4	3	Good yield - long white Save
A6371-2	3-4	Good yield - small - long - mishappen Save
A63126-9	3-4	Good yield, size - rough - knobby Save
A63184-6	3	Good yield - flat Save
A66102-16	4	Good yield, type, size, net, smooth Save
A66122-3	4-5	Very good yield, size, type, uniformity, early Save
A68678-1	5	Very good yield, size, type, net, uniformity - best line Save
BC8370-1	1	Very bad elephant skin Discard

1/ Planted 1 rep of each clone - ranged from 6 to 20 seedpieces per clone

2/ Rated on 1-5 scale with 5 = very good

3/ Notes taken at harvest (Vines killed Aug. 21) based on appearance laying on top of ground.

Washington Table 5. Notes from preliminary, late harvest, observation trial conducted at Prosser, Washington--1975

Clone[1]	Overall Rating[2]	Notes[3]
WC230-14	3-4	Good yield, type, smooth, net, % 1's - blocky to long Save
WC285-18	2	Poor yield, uniformity - good type, smooth, net Discard
WC285-83	3	Good yield, type, smooth, specific gravity - pear shape Discard
WC314-2	4	Good yield, type, size, smooth, net, % 1's - blocky Save
W699-2	2	Good net, smooth - pr yield, uniformity - too small Discard
Norris Special	3-4	Very good yield, size, net, % 1's, blocky to long, flat, rough Save
A66102-13	3	Good yield, smooth, net - flat - pr uniformity Discard
A66107-4	4-5	Good yield, type, smooth, net, uniformity - blocky to long Save
A66107-107	4	Good yield, type, net, uniformity - flat - deep eyes - blocky Save
A66107-207	3-4	Good yield, smooth, net, % 1's, poor uniformity - round to blocky Save
A67315-7	4	Very good yield, type, size, smooth, uniformity - flat - blocky Save
A6830-3	3-4	Very good yield, type, smooth - blocky - pear shape, low % 1's Save
A68113-4	2-3	Very good yield - long white - pear shape - rough Discard
A68233-6	2-3	Good yield - poor uniformity, type, crack, rough, knobby Discard
A68457-7	2	Poor yield - poor uniformity, type, crack Discard
A68689-1	2-3	Fair yield - good type - poor uniformity, pear shape - blotchy Discard
A68709-2	4	Good yield, type, net, smooth - looks good Save
A69113-1	2-3	Good yield - rough, blocky white - pr uniformity Discard
A69173-2	3	Good yield, net, uniformity - bad pear shape Discard
A69327-5	4	Very good yield, type, net, % 1's - rough eyes Save
A69657-4	1-2	Good yield - very rough, knobby - blotchy white Discard
A69827-4	4	Good yield, type, uniformity - blocky - light net Save
A69850-4	2	Good yield - long white - rotten stem ends Discard
A69868-2	2	Poor yield, crack, uniformity - long white Discard
A70758-3	3	Good yield, net - poor uniformity - blocky to long Discard
B6987-56	2	Fair yield, uniformity - round white Discard
B7139-4	1-2	Poor yield, uniformity - large, round white Discard
B7151-4	1-2	Good yield - very poor uniformity, rough - white Discard
B7583-6	3	Good yield, net, size, poor uniformity - round to blocky Save
B7583-19	1-2	Poor yield, uniformity - rough - flat - blocky Discard
B7587-5	2	Poor yield, uniformity, rough - good type - long Discard
B7610-1	2	Good yield - pr uniformity, crack Discard
B7684-7	1	Very poor yield, type, rough - worthless Discard
B8180-2	2	Fair yield - poor uniformity, rough - good net Discard
B8218-4	3	Good yield, uniformity, net, size, type - pear shape, rough - long Save
NDA9249-3	1-2	Poor yield, uniformity, net - pear shape Discard

1/ Planted 1 rep of each clone - ranged from 6 to 20 seedpieces per clone

2/ Rated on 1-5 scale with 5 = very good

3/ Notes taken at harvest in early November based on appearance laying on top of ground

R. J. Young[1], R. L. Williams[1], and Freddie J. Alt[1]

Reedsville Yield Test 1975. Three separate yield tests were conducted on the West Virginia Experiment Station Farm located at Reedsville, WV. One test consisted of 10 entries with 6 replications, the remaining 2 yield tests were comprised of 15 entries each and 3 replications. The experiments were hand planted into preformed rows on May 21, 1975. One half of the fertilizer requirement was broadcast and plowed down, the remainder was applied in furrows at planting. Disyston was also incorporated in furrow at planting according to manufacturer's recommendations. Each replication consisted of 30 seed on 10" centers planted into 20 ft. of row which is equivalent to approximately 0.0017 acres. Potato vines were killed on September 2, 1975, allowing for 103 growing days. Late blight was a factor in late August resulting in considerable tuber rot in some clones, compare Abnaki, WV Table 3. Tubers were harvested on Oct. 22, 1975. Results of these experiments are presented in WV Tables 1, 2, and 3. Additional information is provided in terms of foliage blight infection (Huttonsville data) and tuber characteristics.

Integrated Control of Potato Late Blight. Two advanced West Virginia breeding lines and Sebago were planted in a replicated field trial to test the practicality of integrated control of potato late blight. The components of integrated control tested in this study utilized both "major gene" and "minor gene" resistance inherent in the breeding lines and periodic fungicidal spray applications. The plots were planted in the Tygart River Valley near Huttonsville, WV on June 10, 1975. Replicated plots were separated by "inoculator-rows" of the variety Russet Rural. The spray schedule began on July 23, 1975.

Plots sprayed weekly received a total of 7 protective sprays including fungicide (3 lbs. Maneb) and insecticide (2 pt./acre, Metasystox R). Plots sprayed once every 2 weeks received only 4 protective sprays, and plots sprayed once every 4 weeks received only 2 protective sprays. Insecticides were applied only when fungicides were applied.

Potato foliage was killed with dinitro on October 13, 1975. This allowed 125 growing days. Six 25-ft.-of-row samples of each variety were harvested on October 30, 1975 from 2 replicated plots.

On July 23, 1975, blight lesions were found uniformly throughout the experiemnt on susceptible foliage of Russet Rural and on Abnaki planted in an adjacent plot. No lesions were found on Sebago, BR5991-WV16 or BR5991-WV13. The latter 2 clones remained blight free throughout the growing season. The indigenous race of Phytophthora infestans was identified to be race-1,4 which is the common race of the pathogen found in West Virginia.

By mid-August, warm dry conditions prevailed in the experiment. the "inoculator-row" variety Russet Rural was already 90 percent defoliated by August 21, while Sebago was less than 5 percent defoliated in the 2 spray treatment. Late blight was therefore of relatively little consequence late in the season with regard to the yield reduction that occurred with the omission of sprays, Table 4.

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1)Associate Plant Pathologist, Graduate Assistant, and Farm Manager, respectively, West Virginia University Agricultural Experiment Station.

Although insect counts were not made, both aphids and leaf hoppers were present on potato foliage later on in the growing season. On Sebago, it is possible that late blight and insects combined to produce the observed 13 percent yield reduction. In the resistant breeding lines, the foliage remained freer of blight throughout the season, being protected by major gene resistance. However, yields from the 2-spray program were reduced on an acreage of 13 percent compared to the 7-spray program, with yield reduction being greater in BR5991-WV16 (5.76%). This we attribute to insect related injury. The results also suggest that BR5991-WV13 may carry some level of tolerance to leaf hoppers and aphids.

Results obtained from the 1974 and 1975 experiments support the general concept of integrated control of potato late blight. However, the 1975 results emphasize the importance of insects in the over-all concept of integrated control.

West Virginia Table 1. Yield potential of and other characteristics of 10 advanced West Virginia breeding lines evaluated at Reedsville, WV, 1975.

Pedigree	Yield[1] US No. 1	% US No. 1	% Blighted Tubers	TGA mg/100 g Fresh Wt[2]	Foliage Reading[3] 8-21-75	Tuber Rating[4]
BR6991-WV16	258.6	93.4	0.0	29.2	2+	3+-4 (wh)
B6086-WV21	219.4	73.2	0.0	16.4	2+	3-3+ (wh)
BR5991-WV13	216.6	89.3	0.0	25.0	3	3-3+ (wh)
B6935-WV2	213.2	92.9	0.0	9.35	3+	3+ (wh)
B6949-WV6	179.2	92.1	1.2	14.6	3+	3+-4 (wh)
Kennebec	154.5	58.2	40.5	28.0	4	3-3+ (wh)
Alamo	143.4	57.0	40.4	16.0	5	3+ (wh)
B6949-WV3	141.4	56.4	38.0	(No test)	1+	3+ (wh)
B6981-WV4	123.8	54.2	40.0	38.1	3-	3-3+ (wh)
B6043-WV6	121.1	52.6	45.4	12.0	2	3+-4 (wh)

1/Yield in cwt/A of US No. 1 tubers.

2/TGA = total glycoalkaloid content given in mg/100 g fresh weight.

3/Foliage reading, 8-21-75; 0 = no late blight; 1 = trace; 2 = less than 10% defoliation; 3 = 50% defoliation; 4 = 75% defoliation; 5 = plants dead from late blight.

4/Tuber rating: 1 = poor type; 5 = excellent type; wh = white.

West Virginia Table 2. Yield potential and other characteristics of 15 West Virginia breeding lines evaluated at Reedsville, WV, 1975.

Pedigree	Yield[1] US No. 1	% US No. 1	% Blighted Tubers	TGA mg/100 g Fresh Wt[2]	Foliage Reading[3] 8-21-75	Tuber Rating[4]
B6988-WV8	207.56	74.2	8.5	10.5	4+	3-3+ (wh)
B6992A-WV6	203.5	91.4	0.0	2.42	4+	3+-4 (wh)
B6992A-WV8	198.4	80.8	0.0	2.59	3	2+ (wh)
B6981-WV2	193.02	75.4	3.3	(No test)	5	3+-4 (wh)
B6988-WV10	189.9	78.02	5.7	6.21	4	3+-4 (wh)
B6981-WV1	188.9	70.5	0.0	1.38	2	3+ (wh)
B6981-WV3	177.3	62.0	5.8	6.51	4+	3-3+ (wh)
B6988-WV4	177.3	81.3	0.0	(No test)	3-	3 (wh)
B6949-WV7	171.9	90.8	0.0	(No test)	5	3+-4 (wh)
B6692A-WV2	167.03	86.4	0.0	2.93	5-	3-3+ (wh)
B6988-WV6	164.5	79.0	0.0	8.64	3	3- (wh)
B6992A-WV3	151.9	76.6	10.6	(No test)	5-	3+-4 (wh)
B7019-WV2	130.23	66.5	0.0	3.26	5-	3-3+ (wh)
B6928-WV6	117.3	66.2	19.0	3.65	4+	3+-4 (wh)
B6988-WV5	114.4	53.6	0.0	7.32	2-	3 (wh)

1/Yield in cwt/A of US No. 1 tubers.

2/TGA = total glycoalkaloid content given in mg/100 g fresh weight.

3/Foliage reading 8-21-75, 0 = no late blight; 1 = trace; 2 = less than 20% defoliation; 3 = 50% defoliation; 4 = 75% defoliation; 5 = plants dead from late blight.

4/Tuber Rating: 1 = poor type; 5 = excellent type; wh = white.

West Virginia Table 3. Yield potential and other characteristics of 15 USDA advanced lines evaluated at Reedsville, WV, 1975.

Pedigree	Yield[1] US No. 1	% US No. 1	% Blighted Tubers	TGA mg/100 g Fresh Wt[2]	Foliage Reading[3] 8-21-75	Tuber Rating[4]
B6782-1	279.1	92.7	0.0	2.85	4+	3+-4 (wh)
B6815-14	251.6	77.3	6.1	9.49	2+	3+ (red)
BR6446-2	248.7	85.0	0.0	1.30	4+	3+ (wh)
B6139-11	247.5	89.1	0.0	1.56	3+	3+-4 (wh)
B6097-9	229.2	90.6	0.0	3.06	3+	3+ (wh)
B6463-2	228.9	84.8	0.0	4.0	4+	3+ (wh)
B6255-1	166.1	91.6	0.0	6.32	4+	3+ (wh)
B6761-11	163.8	76.0	0.0	4.06	2-	3+ (wh)
BR6265-1	146.1	90.0	7.0	0.59	4+	3+ (wh)
BR6291-19	141.87	68.3	0.0	6.0	4	3+-4 (wh)
B6705-10	141.78	81.8	0.0	1.60	4	3+ (wh)
BR6879-5	130.4	84.2	0.0	11.37	5	3+ (wh)
CA03-2	121.1	78.2	20.3	2.26	5	3+ (wh)
Abnaki	102.15	41.2	56.6	1.47	5	3 (wh)

1/Yield in cwt/A of US No. 1 tubers.

2/TGA = total glycoalkaloid content given as mg/100 gm fresh weight.

3/Foliage reading 8-21-75, 0 = no blight; 1 = trace; 2 = less than 10% defoliation; 3 = 50% defoliation; 4 = 75% defoliation; 5 = plant dead from blight.

4/Tuber rating: 1 = poor type; 5 = excellent type; wh = white.

West Virginia Table 4. Integrated control of potato late blight.

Pedigree	Yield[1] 7 Sprays	Yield[1] 2 Sprays	Percent Reduction	Blight Resistance[2] Major Genes	Blight Resistance[2] Minor Genes
BR5991-WV16	359.5	284.9	20.75	$R_1R_2R_3R_4$	2+
BR5991-WV13	251.9	237.4	5.76	$R_1R_2R_3R_4$	3
Sebago	256.4	222.8	13.1	R_0	4-

1)Yield is given in cwt/acre, mean of 6 samples.

2)Five year means of multigenic resistance to race-1,2,3,4 of P. infestans. 0 = no late blight; 1 = trace; 2 = less than 10% defoliation; 3 = 50% defoliation; 4 = 75% defoliation; 5 = plants dead from late blight.

WYOMING

K. E. Bohnenblust

Potatoe Varietal and Seedling Evaluation

Locations. Nurseries designed to evaluate varieties and lines of potatoes in Wyoming were grown at "High Plains Grassland Research Station" operated by USDA-ARS near Cheyenne, on a farm operated by Holgerson Ranch Co. near Pine Bluffs, at the Agricultural Substation at Torrington, and the Agricultural Substation at Powell.

Cheyenne. The nursery at Cheyenne (Table 1.) was severely damaged by hail soon after plants had emerged. Though planted May 19, this resulted in a very late nursery. Fertilizer, 18-38-0, was applied at planting at about 150 lbs. per acre. Furrow irrigation was used. Poor stands in both Red LaSoda and Chieftain resulted in lower than usual yields for those varieties. The yield of W701 was significantly higher than all other varieties. Abnaki exceeded all other varieties in percent No. 1, specific gravity and chip color. The poor chip color may have been due to lateness of the crop following hail damage.

Pine Bluffs. This nursery (Table 2.) contained 11 entries whereas all others contained 12. Though it was planted somewhat late, June 3, it was fairly representative of the area. This field was sprinkler irrigated. Again W701 was the highest yielding entry. Abnaki had highest percent No. 1, WC 285-146 was best in specific gravity, while five entries all had a chip color of "4" which was best in the nursery.

Torrington. There were two nurseries planted at Torrington and they were furrow irrigated. Alfalfa was plowed under but no fertilizer was added. The first (Table 3.) was composed of several varieties and experimental lines from Idaho, Colorado and Wyoming. The highest yield was obtained from W701 which was significantly higher than all other entries. At 91%, Abnaki was again high in percent No. 1. Nampa had the highest specific gravity, 1.088; New Haig and Superior had the best chip color.

The second nursery (Table 4.) at Torrington compared several experimental lines with two standard varieties. Red LaSoda had the best yield but was not significantly better than five of the experimental lines. The highest percent No. 1 was the 93 of W74-2. The 1.099 of W-74 was the highest specific gravity. The best chip color was the "3" of W74-5 and W74-13.

Powell. The nursery at Powell (Table 5.) was planted May 14. It was furrow irrigated and fertilizer was applied at the rate of 100 lbs. available N and 100 lbs. available P_2O_5. Red LaSoda was the best yielding entry, but not significantly different from Wyred or W701. As in all the nurseries where it was included, Abnaki had the highest percent No. 1. Samples for specific gravity and chip color were inadvertantly destroyed.

Wyoming Table 1. Yield, specific gravity, and chip color of potato varieties and lines grown at Cheyenne, Wyoming--1975

Variety	Total yield /acre	% No. 1	Specific gravity[1/]	Chip color[2/]
W-701	306.4	85	1.076	8
A66122-3	268.6	83	1.072	7
Red LaSoda	265.0	87	1.089	6
Superior	255.6	86	1.081	7
Abnaki	221.4	90	1.088	5
New Haig	218.5	86	1.083	7
Nampa	204.0	75	1.081	7
Russet Burbank	201.8	73	1.078	8
A6371-1	194.6	68	1.076	6
WC 230-14	192.4	85	1.077	9
WC 285-146	181.5	82	1.080	8
Chieftain	161.9	87	1.071	8
Overall Mean	183.9			
LSD (.05) =	37.6			

[1/] Determined with potato hydrometer

[2/] Compared with PCII color standard

Wyoming Table 2. Yield, specific gravity, and chip color of potato varieties and lines grown at Pine Bluffs, Wyoming--1975

Variety	Total yield cwt/acre	% No. 1	Specific gravity[1/]	Chip color[2/]
W701	399.2	89	1.082	4
New Haig	327.4	86	1.089	5
A6371-1	315.1	71	1.089	8
A66122-3	289.7	77	1.089	4
Abnaki	284.6	90	1.089	4
Superior	264.3	83	1.090	4
Russet Burbank	259.9	80	1.090	4
Nampa	259.2	75	1.090	7
Red LaSoda	234.5	83	1.085	6
WC 285-146	217.8	85	1.094	8
WC 230-14	179.3	83	1.089	7
Overall Mean	275.5			
LSD (.05) =	70.8			

[1/] Determined with potato hydrometer

[2/] Compared with PCII color standard

Wyoming Table 3. Yield, specific gravity, and chip color of potato varieties and lines grown at Torrington, Wyoming--1975

Variety	Total yield cwt/acre	% No. 1	Specific gravity[1/]	Chip color[2/]
W701	464.6	90	1.082	4
New Haig	347.8	86	1.079	3
Abnaki	339.8	91	1.085	4
Red LaSoda	335.4	85	1.077	6
Russet Burbank	333.2	81	1.081	5
Chieftain	295.5	94	1.083	5
A6371-1	276.6	83	1.080	7
Nampa	270.1	84	1.088	5
WC 230-14	266.4	88	1.080	6
WC 285-146	258.5	89	1.080	6
A66122-3	223.6	66	1.086	5
Superior	193.8	90	1.082	3
Overall Mean	300.4			
LSD (.05) =	76.9			

1/ Determined with potato hydrometer

2/ Compared with PCII color standard

Wyoming Table 4. Yield, specific gravity, and chip color of potato varieties and lines grown at Torrington, Wyoming--1975

Variety	Total yield cwt/acre	% No. 1	Specific gravity[1/]	Chip color[2/]
Red LaSoda	379.7	90	-	-
W74-1	334.7	92	1.086	4
W74-2	334.0	93	1.085	4
W74-5	329.7	84	1.088	3
W74-7	326.0	90	1.097	5
W74-12	326.0	91	1.099	5
Russet Burbank	316.5	89	1.087	5
W74-14	310.7	88	1.087	4
W74-10	288.9	89	1.085	4
W74-13	284.4	89	1.100	3
W74-6	250.5	58	1.087	5
W74-9	255.6	91	1.087	4
Overall Mean	311.4			
LSD (.05) =	60.0			

[1/] Determined with potato hydrometer

[2/] Compared with PCII color standard

Wyoming Table 5. Yield of potato varieties and lines grown at Powell, Wyoming--1975

Variety	Total yield cwt/acre	% No. 1
Red LaSoda	405.1	87
Wyred	379.0	82
W701	358.6	83
Superior	319.4	83
New Haig	306.4	80
Russet Burbank (a)	302.0	76
Abnaki	300.6	90
Norgold	275.9	82
Norgold Sel.	267.2	82
Russet Burbank (b)	258.5	89
Nampa	222.2	82
WC 230-14	169.9	73
Overall Mean	297.1	
LSD (.05) =	59.0	